1954

HNOLOGY - PPT.

Gas Journal

VOL. 277 106TH YEAR. LONDON, FEBRUARY 10, 1954 NO. 4732. PRICE 1/3

PUBLIC LIBRARY
FEB 23 1954
DETROIT 2, MICH.

GAS, CHEMICAL AND CONSTRUCTIONAL ENGINEERS

DONNINGTON NEAR WELLINGTON—SHROPSHIRE
LONDON OFFICE—70 VICTORIA STREET S.W.1.

WELDED STEEL, WATER COOLED CONDENSERS
TH VERTICAL WATER TUBES 3¼IN. OUTSIDE DIAMETER, GAS COOLING SURFACE 102,000 SQUARE FEET

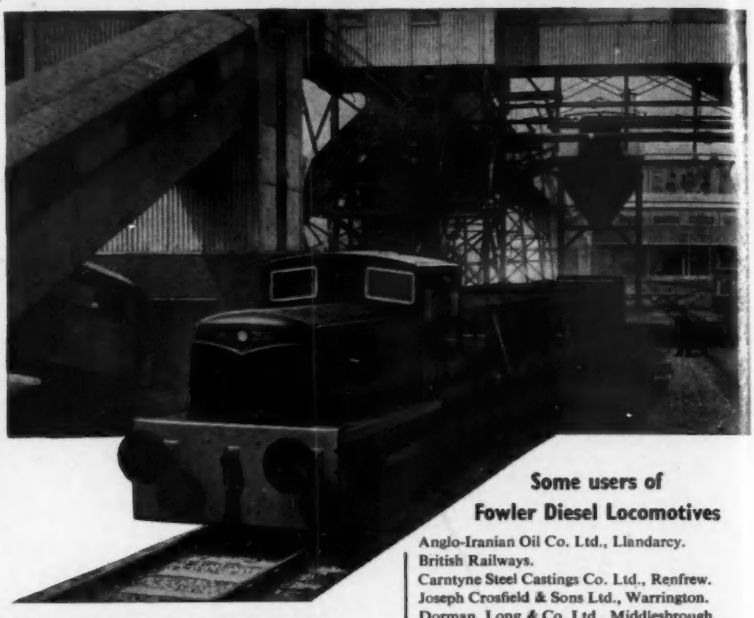
One of the

FOWLER

Diesel Locomotives

in service at Fisons new fertilizer factory at Immingham

THIS 150 horse-power Fowler Diesel Locomotive is always ready for instant use. It provides economical and quick yard wagon movement with the maximum comfort and vision for the driver.



Some users of Fowler Diesel Locomotives

Anglo-Iranian Oil Co. Ltd., Llandarcy.
British Railways.
Carntyne Steel Castings Co. Ltd., Renfrew.
Joseph Crosfield & Sons Ltd., Warrington.
Dorman, Long & Co. Ltd., Middlesbrough.
Fisons Ltd., Immingham and Avonmouth.
John Garrington & Sons Ltd., Bromsgrove.
Guest, Keen and Nettlefolds Ltd., Cardiff.
Imperial Chemical Industries Ltd.
Richard Johnson and Nephew Ltd., Manchester.
Michelin Tyre Co. Ltd., Stoke-on-Trent.
National Coal Board.
North Devon Clay Co., Torrington.
Pressed Steel Co. Ltd., Cowley, Oxford.
Shell-Mex and B.P. Ltd.
The Steel Company of Scotland Ltd., Glasgow.

FOWLER (LEEDS) **DIESEL LOCOMOTIVES**

In rail gauges from 2ft—5ft. 6ins.

Information and literature from **John Fowler & Co. (Leeds) Ltd., Leeds, Yorks.**

Telephone: Leeds 30731 (10 lines)

A PRODUCT OF THE MARSHALL ORGANISATION, GAINSBOROUGH, ENGLAND.

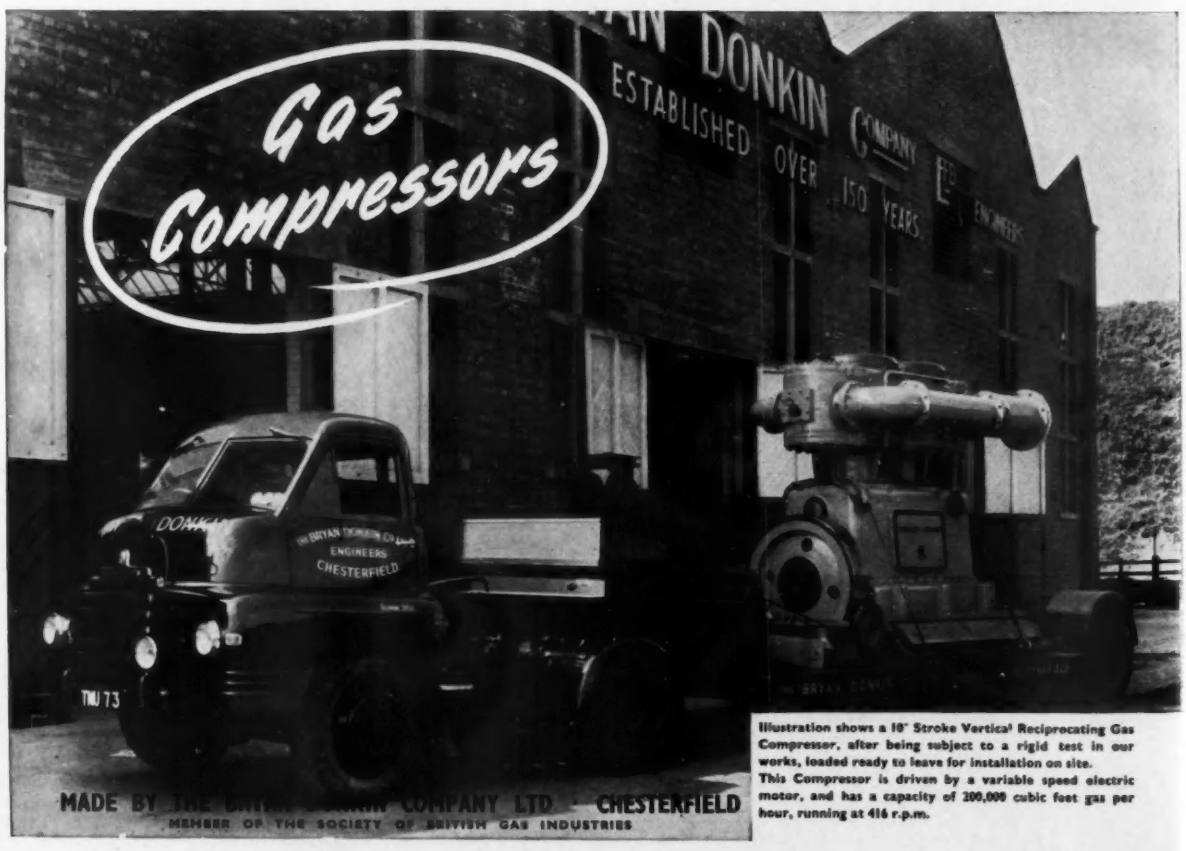
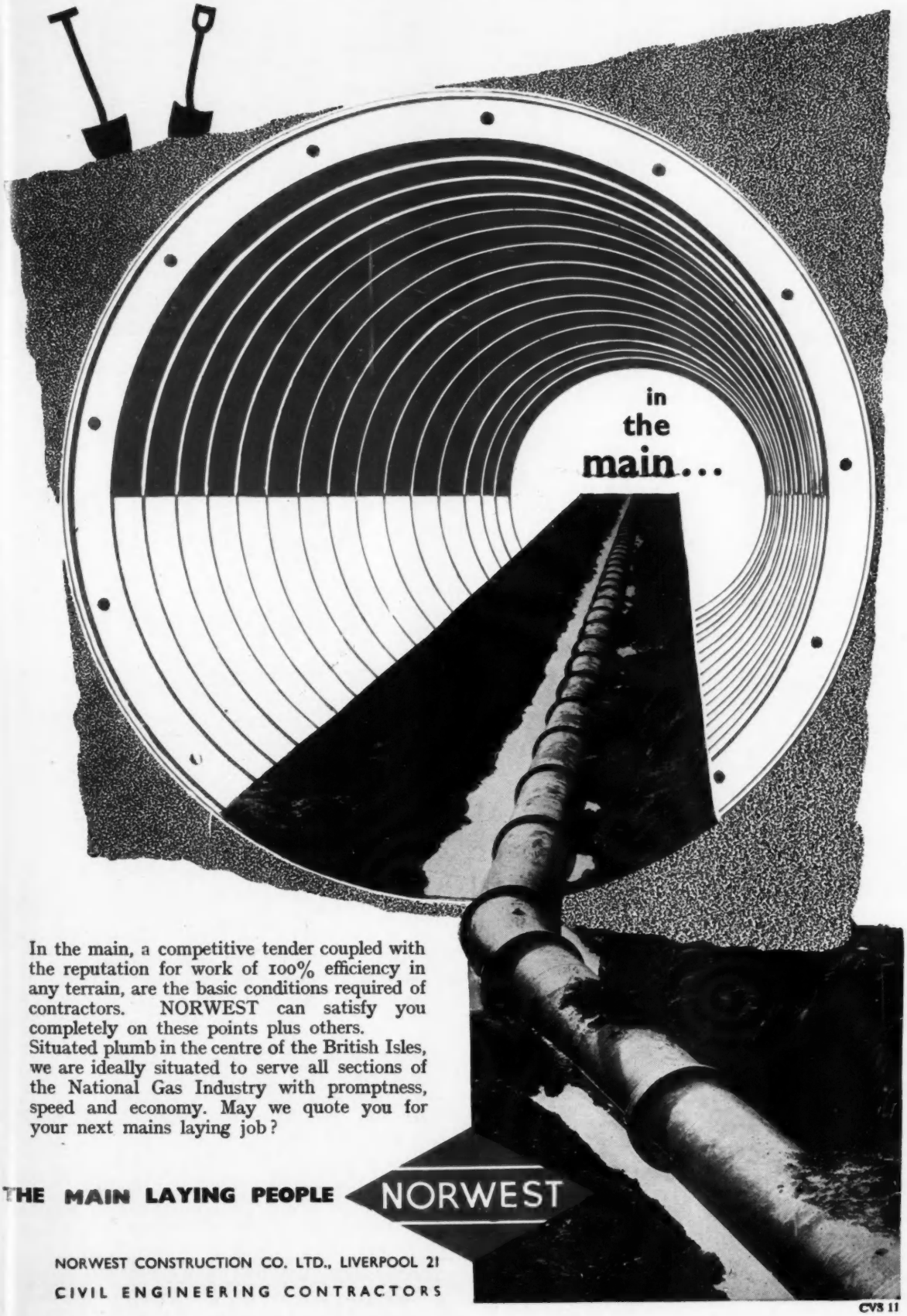


Illustration shows a 10" Stroke Vertical Reciprocating Gas Compressor, after being subject to a rigid test in our works, loaded ready to leave for installation on site. This Compressor is driven by a variable speed electric motor, and has a capacity of 200,000 cubic feet gas per hour, running at 416 r.p.m.



In the main, a competitive tender coupled with the reputation for work of 100% efficiency in any terrain, are the basic conditions required of contractors. NORWEST can satisfy you completely on these points plus others.
Situated plumb in the centre of the British Isles, we are ideally situated to serve all sections of the National Gas Industry with promptness, speed and economy. May we quote you for your next mains laying job?

THE MAIN LAYING PEOPLE NORWEST

NORWEST CONSTRUCTION CO. LTD., LIVERPOOL 21
CIVIL ENGINEERING CONTRACTORS

CVS 11

A

There's 4 MILLION FEET OF PROOF that FRANCOIS BORED PILES GIVE GREATER STRENGTH & STABILITY to foundations of every type.

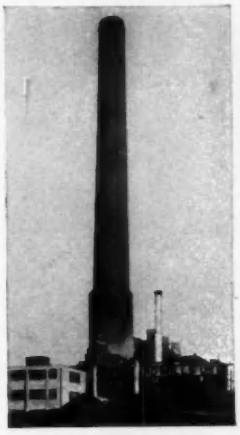
From the investigation of the site to the completion of the job, the Cementation Co. Ltd. provide a complete world-wide service on foundations and underpinning, which is unrivalled for experience, facilities and resources.

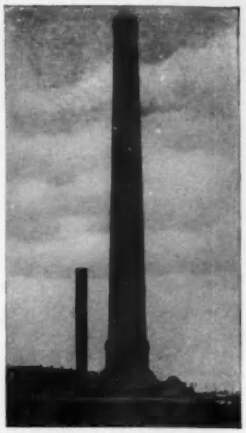
Time has proved, over and over again that concrete piles and cementation methods not only give the greatest strength and stability to many types of foundation, but are often the only solution in certain difficult conditions.

In addition there is no harmful vibration, distortion or excessive noise during construction.

The successful completion of over 4 million feet of Bored Piling during the last fifteen years is an achievement which speaks for itself.

Left : Trial borings for reconstruction of Coventry Cathedral.





Two of the largest chimneys in the British Isles; on foundations of Francois Concrete Piles (left) and Francois Cementation Piles (Right)

Write for your copy of our new booklet about Bored Piling.

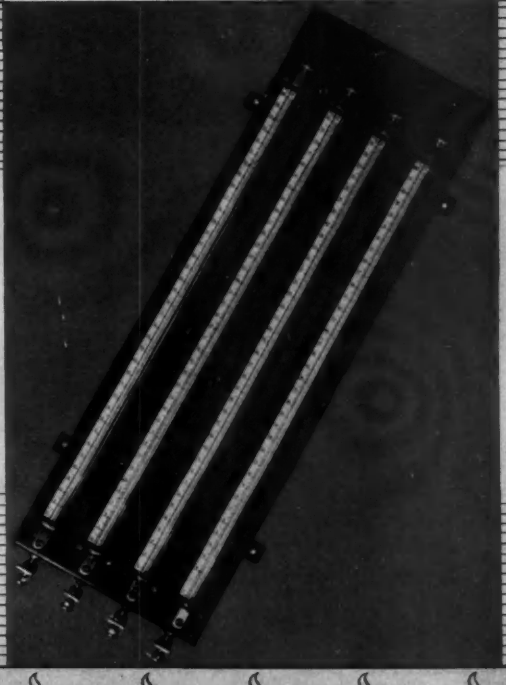
The CEMENTATION COMPANY LIMITED

London Office : 39, Victoria St., S.W.1. Tel. ABBey 5726

BENTLEY WORKS, DONCASTER Telephone 54177-8-9

MOUNTED ON EBONY SINDANYO BOARD

SINGLE TUBE PRESSURE GAUGES



INSTRUMENTS OF PRECISION

MOUNTED ON EBONY SINDANYO

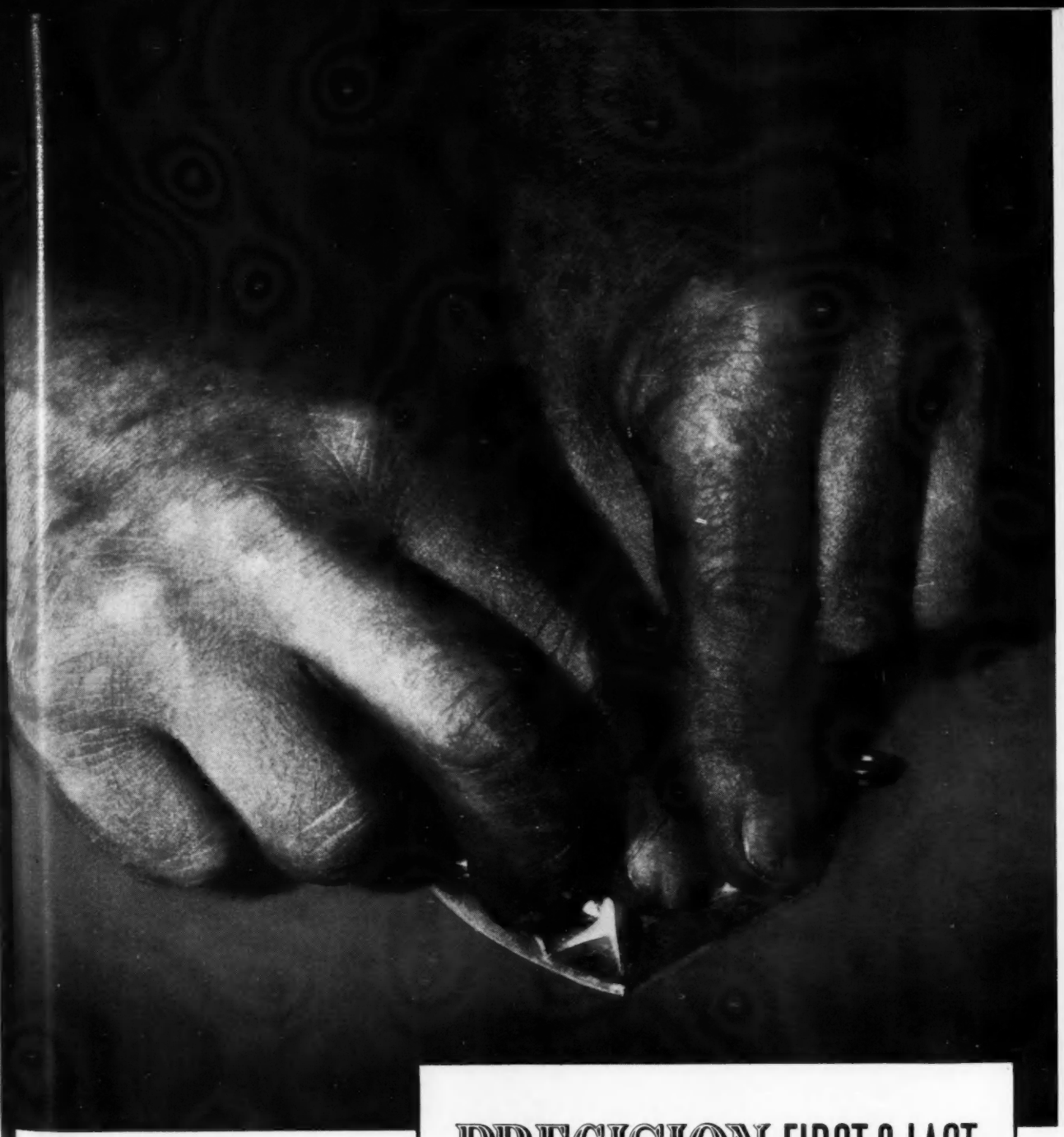
MILNE'S METERS LTD

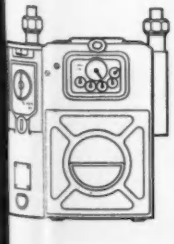
MILTON HOUSE WORKS

EDINBURGH

LEEDS BRANCH

MIDLAND METER WORKS VICTORIA ROAD





In the production of meters, as in that of all Willey equipment, precision is the keynote. From the selection of materials to the final testing, high standards are set for man and machine alike.

PRECISION FIRST & LAST

WILLEY

WILLEY & CO. LTD. EXETER · LONDON · MANCHESTER · LEICESTER · DARLINGTON

Associated Company of United Gas Industries Ltd.

HARDMAN & HOLDEN LIMITED

Are pleased to inform the Gas Industry that adequate supplies of the necessary raw materials are now available for the manufacture of increased quantities of

MANOX OXIDE

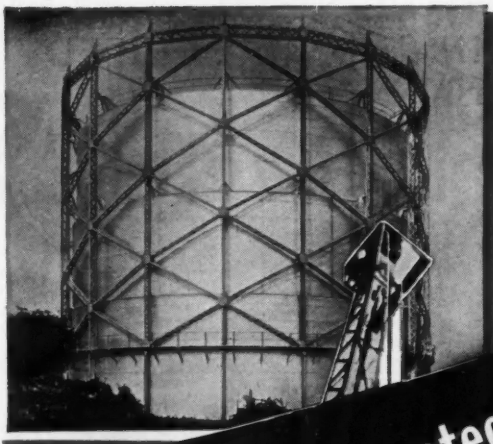
They are therefore in a position to supply all normal requirements of this well-known purifying material and can offer prompt delivery by road or rail.

HARDMAN & HOLDEN LIMITED

Manox House, Miles Platting, Manchester 10

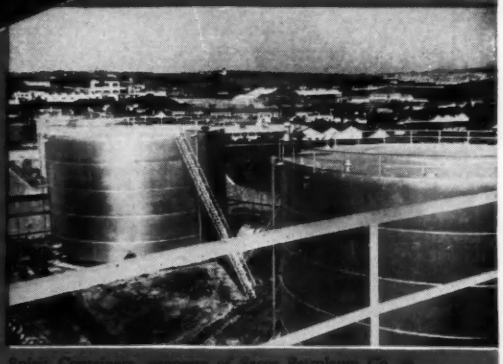
Telephone : COLlyhurst 1551

Telegrams : OXIDE MANCHESTER



Gasholder in Kent showing brilliance of Atlas Ruskilla Aluminium Paint.

For the protection of metal structures



Spirit Containers, property of Sacor Petroleum Co. in Portugal, coated with "Atlas Ruskilla" Aluminium Paint. High reflectivity of this paint reduces effects of solar heat and consequent loss of spirit by evaporation.

ATLAS RUSKILLA Iron and Steel Preservative Paints have been specifically designed for the enduring protection of all types of structural work. They embody over half-a-century of specialised experience in the manufacture of anti-corrosive paints, and their stamina has been proved in every part of the world. Let us send you Shade Card and prices.

For economy's sake, order or specify . . .

ATLAS RUSKILLA

IRON & STEEL PRESERVATIVE PAINTS

The Paints of Stamina!

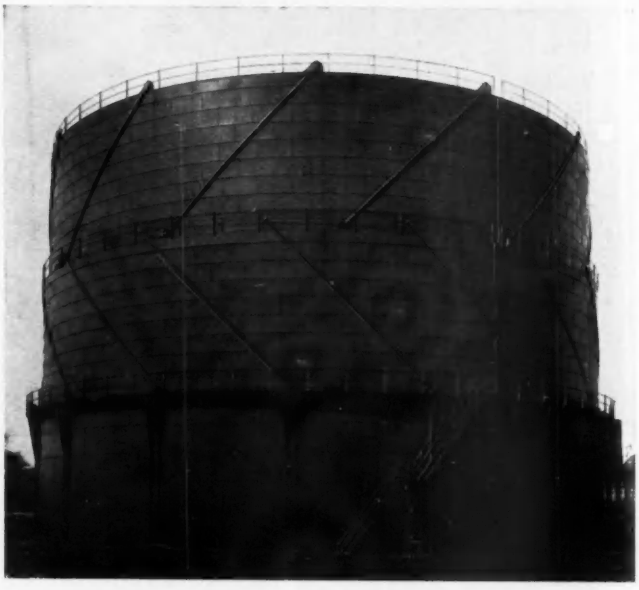
ATLAS PRESERVATIVE CO. LTD., ERITH, Kent. 'Phone: ERITH 2255 (5 lines) 'Grams: Deoxydizer, Erith.

TAS/AS 76

for HIGH PRESSURE, COLUMN GUIDED

GASHOLDERS

RIVETTED OR WELDED



BLAKELEYS

Consult

FIRTH BLAKELEY SONS & CO LTD

CHURCH FENTON, YORKS

Telephone: BARKSTON ASH 234/5

you only dig once

and fix it for good

If you have to reopen roads to repair the same joint twice—then you have paid out more than the price of a permanent repair—without getting permanence. Recaulking may stop the leak temporarily, but it leaves you with a joint no better than the one that failed. It does nothing to combat the trouble. That's why more engineers every year are making it standard practice to repair all leaking joints permanently with Dresser Style 60 Clamps. Their resilient gaskets harmlessly absorb stresses which would cause repeated failures in rigid joints. Obviously, the easiest and cheapest repair is to clamp the *first* time you have the joint uncovered. Next time—make sure—put on a Dresser Style 60. Millions are in use. All sizes from 3" to 48".

DRESSER STYLE 60 adjustable leak clamps

Direct from works to customers and obtainable only from
DRESSER MANUFACTURES (ENGLAND) LIMITED *(One of the Dresser Industries)*
39 VICTORIA STREET, LONDON, S.W.1. TELEPHONE: ABBEY 5238. TELEGRAMS: DRESCLAM SOWEST LONDON

One of a series of advertisements dealing with fundamental features of the

SMITH UNIVERSAL DOMESTIC METER

ALL EXTERNAL JOINTS are METAL-TO-METAL incorporating the use of a sealing adhesive. This ensures no "packing down" of gaskets after assembly. Note the deep double reservoir meter base.

ROUND PAN DIAPHRAGMS are used, allowing for easy removal and servicing.

METER BOSSES The boss and top are one solid casting, eliminating all chances of fracture or leaks. Strictly controlled within 0.010" of normal dimensions.

The use of **"RADIAL VALVES"** anti-corrosive bearings and ball pivot bearings, is incorporated throughout.

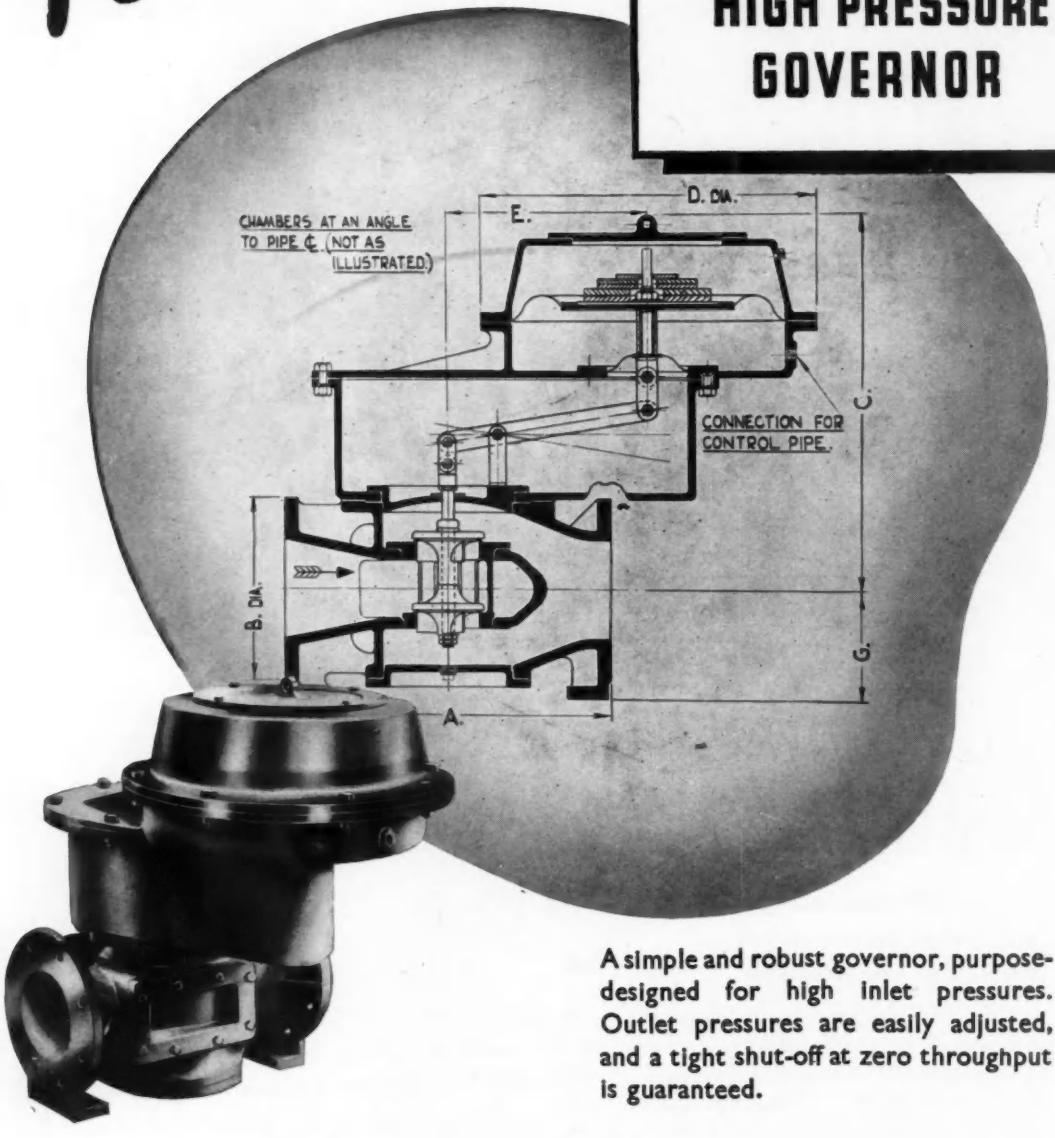
The Smith Universal Domestic Meter is the result of five years' exhaustive research, and is backed by the experience and resources of the Smith organisation. It has been thoroughly tested and proved.

SMITH METERS *DOMESTIC AND INDUSTRIAL*

SMITH METERS LTD. 186 Kennington Park Rd., London, S.E.11. Phone : RELiance 2447-8-9. Grams: Smieters, Lamb, London
Works : Kennington, S.E.11 and Streatham Vale, S.W.16. Northern Sales Office : 3-4 East Parade, Leeds, 1. Phone : 23726

Peebles & CO. LTD.

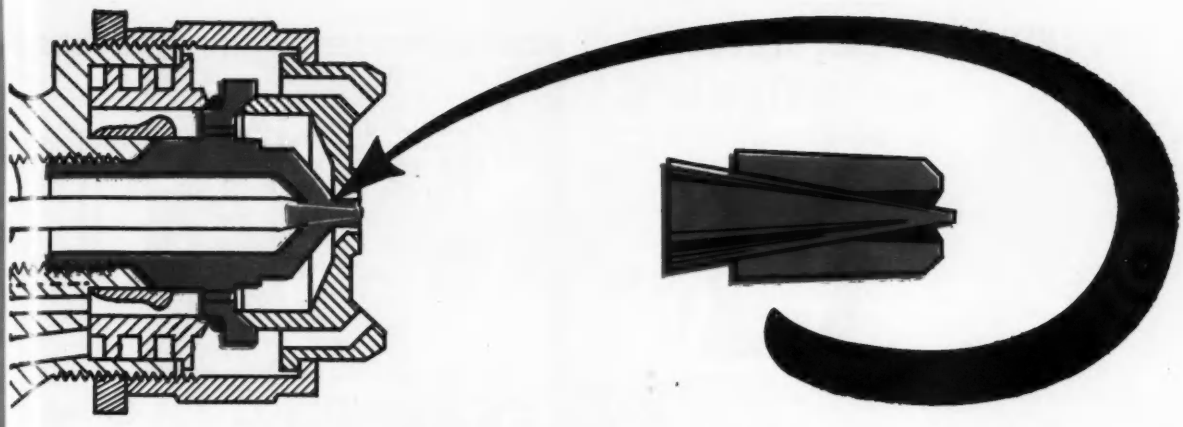
THE FIGURE 124
HIGH PRESSURE GOVERNOR



A simple and robust governor, purpose-designed for high inlet pressures. Outlet pressures are easily adjusted, and a tight shut-off at zero throughput is guaranteed.

TAY WORKS, WEST BOWLING GREEN STREET, EDINBURGH, 6

Telephone Nos.: LEITH 36544 & 35069. Telegrams: "TANGENT, EDINBURGH."



abrasive materials spelt ruin to spray guns

—until DEVILBISS·AEROGRAPH introduced

NITRA-ALLOY

NOZZLES AND NEEDLE TIPS

With highly abrasive finishing materials, it is the nozzle and needle-tips that take the punishment. DeVilbiss·Aerograph supplied the answer — Nitra-Alloy, which greatly increases the life of guns used for spraying vitreous enamel etc. On all spray equipment, you keep that extra jump ahead that means really competitive production, if you standardise DeVilbiss·Aerograph spray guns and ancillaries. Write for the full descriptive catalogue 20J.

TYPE JGA

—an outstanding advance in heavy duty high-speed gun design. For quality finishing with all types of material. Can also be supplied with *stainless steel* inserts for resistance to corrosive materials.

TYPE DCA

—particularly suitable for spraying small quantities of heavy materials at low pressure. Can be supplied with brass body for use with vitreous enamel and similar abrasive materials.

TYPE VFS

—an easy-to-handle gravity-feed gun, specially designed for producing mottled effects.

Spray Equipment for vitreous enamelling

The SYMBOL of SERVICE

DEVILBISS AEROGRAPH

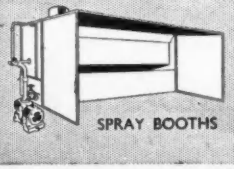
Sets the pace in spraying

The Aerograph Co. Ltd., Lower Sydenham, London, S.E.26. Telephone: Sydenham 6060 (8 lines)

AIR COMPRESSORS

AIR TRANSFORMERS

AIR & FLUID HOSE

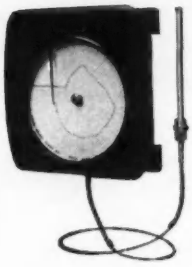


SPRAY BOOTHS

T.A.4886

DIAL THERMOMETERS, RECORDERS and CONTROLLERS

for Industrial Application.



Over 2,000,000 Rototherms in daily use are proof of reliability which with the clear dial and robust construction make them the perfect instruments for all temperature indication, control or recording. Standard and special models are available to meet most requirements. Details upon request.

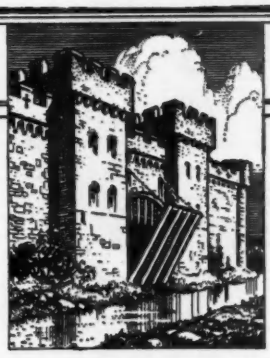
We are also specialists in bi-metallic applications

Rototherm

DIAL THERMOMETERS

THE BRITISH ROTOTHERM CO. LTD.

Merton Abbey, London, S.W. 19. Phone: LIBerty 7661



PROTECTION

GAUNTLET

GAUNTLET

WEATHER TESTED PAINTS

ARCHD H. HAMILTON & CO. LTD

27-37 BARDOWIE STREET POSSILPARK GLASGOW N

I.G.E. AND HIGH CAPACITY

SLOT AND ORDINARY METERS

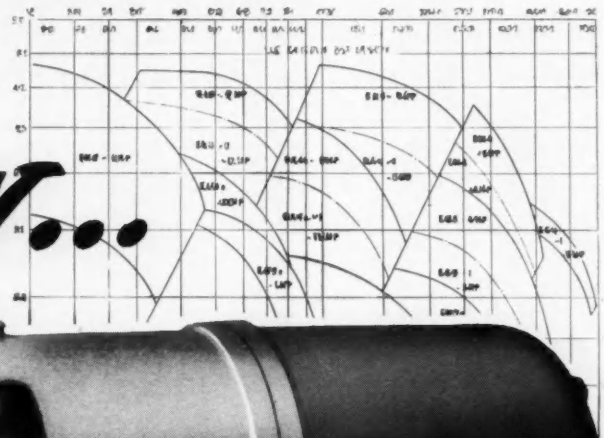
Nothing But the Best Materials and Workmanship Used in Their Manufacture

Repairs—Parts Supplied

R. LAIDLAW & SON (Edin.) Ltd., SIMON SQUARE WORKS, EDINBURGH

8/9, LUDGATE SQUARE, LONDON, E.C.4

It's New...



THE SIGMUND PumPak

Exclusive Features include

★ **NEW VENTILATION SYSTEM**

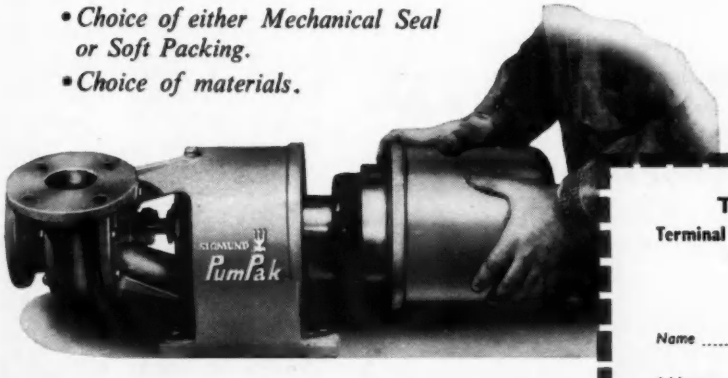
The ventilation design keeps the bearings cool and completely free of gland seepage along the shaft.

★ **REMOVABLE STATOR**

No fuss, no special tools, no interference with pipe connections. Loosen four nuts and draw off the stator.

- *Choice of either Mechanical Seal or Soft Packing.*
- *Choice of materials.*

{ The Pump with the Removable Stator



SIGMUND PUMPS LTD.

To SIGMUND PUMPS LTD.
Terminal House, Grosvenor Gardens, London, S. W. 1.

Send me, without obligation, details of the Pumpak range.

Name .....

Address .....

..... 29

THE SPEED AND 1¼ TONS PER MINUTE! FLEXIBILITY OF C&T EQUIPMENT PROVED IN COAL-HANDLING

At the Plymouth works of the South Western Gas Board these two 50 ft. C & T Horizontal Conveyors are feeding a 50 ft. C & T Super-Mobile Stacker, which is stacking coal at the rate of 75 tons per hour. So much for operating speed. Now note the features which give the mobility and flexibility that minimize the time necessary for changing the point of discharge: each machine is equipped with a tow bar, and the Stacker has swivelling main wheels which permit it to be traversed radially without disturbing the position of the Horizontal Conveyors.

THE C & T 50 ft. MAMMOTH STACKER

This high capacity machine, designed for handling coal and coke, is easy to handle and can be towed long distances, by the mobile shovel that feeds it, at speeds up to 20 m.p.h. The photograph shows this diesel-powered MAMMOTH stacking breeze. Note the enormous overhang which its perfectly balanced design permits. Fed flat out by three mobile shovels, it stacks 46 tons of coke per hour to a height of 25 feet.

CRONE & TAYLOR LTD.

SUTTON OAK, ST. HELENS, LANCS.

'Phone : St. Helens 3397

Whatever your conveying and storing problem may be, do not hesitate to consult us. Doubtless, with our considerable experience, we can help you.

Photographs by courtesy of South Western Gas Board, Plymouth, and South Eastern Gas Board, Wandsworth.

CT3718

prevent wastage & leakage

domestic

industrial

& civic

THE RUTTEN VALVE for Gas Meters is the brain which reminds the careless consumer of his forgetfulness When the pressure in the house supply is reduced to 10/10th's W.G. the valve falls to the closed position. This occurs when the automatic valve in the meter or the main cock is shut off. The gas supply cannot be restored again until all taps beyond the meter are closed or any leakages corrected.

The period necessary for automatic opening after all taps have been closed, can be varied to suit any circumstances,

GEORGE WILSON
GAS METERS LTD.

COVENTRY JARROW LONDON MANCHESTER BLACKPOOL WOLVERHAMPTON TROON

MERCOL PIPE LINE SERVICE FULL BORE

DE-SCALING
-GREASING
-SLUDGING

Our specialised function is to keep mains working at full bore—with the least possible dislocation of supply services.

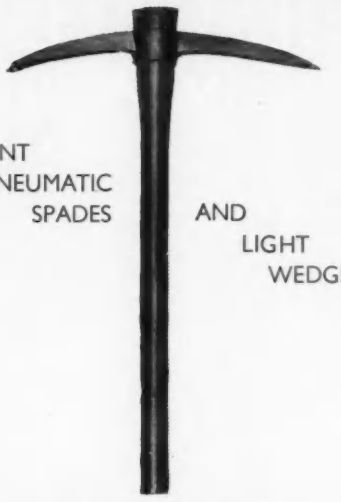
Gas Mains, Water Mains, Sewers, Drains, etc., cleaned by scraping, dredging, boring, flailing, or chemical methods.

Mobile descaling units with latest equipment at your service on short notice.

Write for details

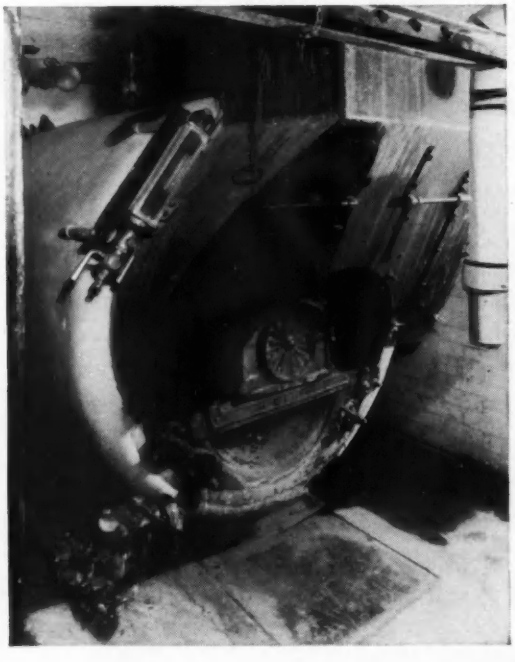
MERCOL PRODUCTS LTD.
Eyre Lane
Descaling Engineers **SHEFFIELD 1**
Telephone 25494 & 27441

NON-SPARKING TOOLS



PATENT PNEUMATIC SPADES AND LIGHT WEDGES

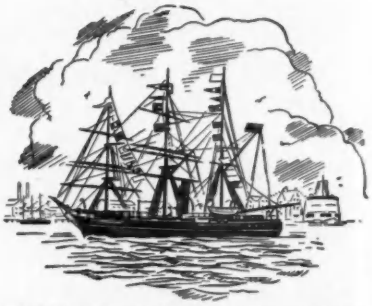
MEIGH CASTINGS LTD.
UCKINGTON FOUNDRY
CHELTENHAM
TELEPHONE 54154



1904

PAXMAN BOILER

Installed at Colcent Laundry Ashby-de-la Zouch.



CAPTAIN SCOTT'S "DISCOVERY" ARRIVING BACK FROM THE FIRST POLAR REGIONS EXPEDITION IN 1904

This Paxman Boiler which was installed in the same year that Scott returned from his first Antarctic Expedition is still giving trouble-free operation. Similar service can be expected from the three types of boiler manufactured by us to-day.

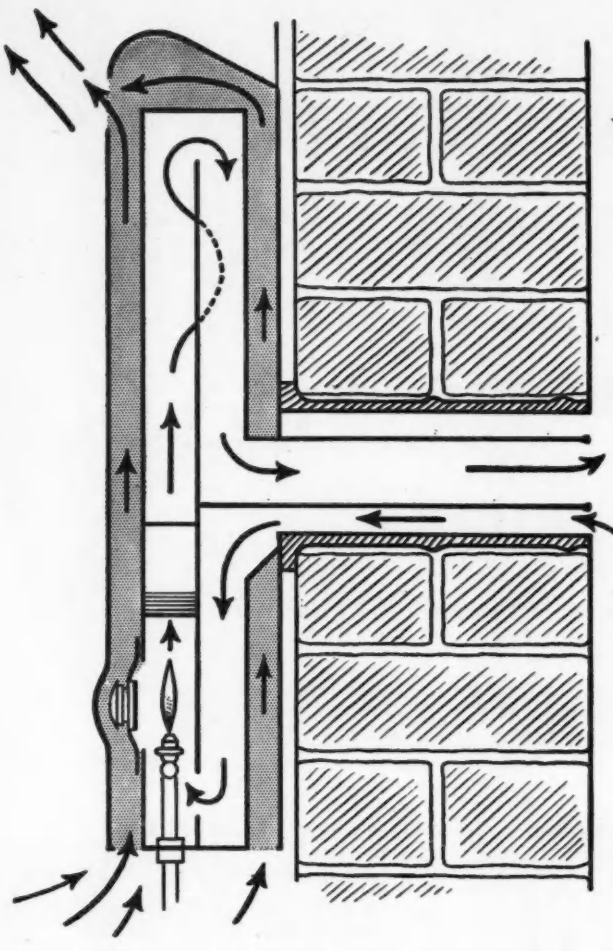
ECONOMIC · ULTRANOMIC · ALL STEEL SECTIONAL

Write for full details and let us advise you on your steam and heating problems.

DAVEY, PAXMAN & CO. LTD. COLCHESTER
Telephone : COLCHESTER 5151 *Telegrams : PAXMAN COLCHESTER*

Paxman

B 35



THREE STAR FEATURES

★**SAFE**

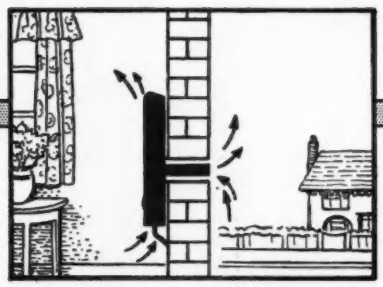
Air drawn from outside building.
Products discharged outside building.

★**EFFICIENT**

75% at any tap position.
Low consumption and running cost.

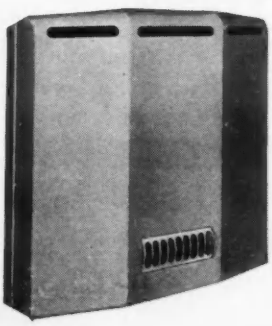
★**HEALTHY**

Room air unaffected by combustion.
Perfect circulation—adequate but not excessive ventilation.



THE "*Sapphire*"

BALANCED FLUE (GAS) SPACE HEATER



Information upon request from manufacturers

COWPER PENFOLD & CO LIMITED

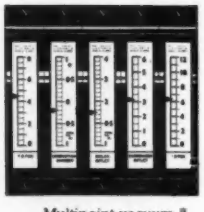
RANELAGH WORKS, CHAPTER STREET,
LONDON. S.W.1. Tel. Victoria 3211 (4 lines)

ELECTROFLO INSTRUMENTATION at the NEW SWAN VILLAGE WORKS

of the West Midland Gas Board

Electrical transmitting steam & water flow manometer.

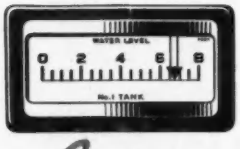
Electrical transmitting gas flow meter.



Multipoint vacuum & pressure indicator.

Multipoint Temperature indicator.

Circular recorder for flow, pressure etc.



17" Scale indicator for level, pressure etc.

TWO WASTE HEAT BOILER PANELS
Covering all necessary flow, draught, temperature and CO_2 measurements. Enclosed cubicles at boiler level.

TWO RETORT PANELS (TOP OF SETTING)
Governor control recorders, liquor and foul main pressures, gas temperatures, waste gas main suction. Enclosed cubicles.

TWO RETORT PANELS (BOTTOM OF SETTING)
Retort steam flows and pressures. Enclosed cubicles

ONE PRODUCER PANEL
Producer steam flow, CO main pressure recorder, Calorimeter.

FIVE MECHANICAL PRODUCER CONTROL PANELS
Multipoint pressure indicators for producers and separators, Steam flows and pressures, blast saturation temperature, etc. Grate controls, recording pyrometers and air flow meters.

POWER HOUSE CONTROL ROOM PANEL
Turbine and pass-out steam flows. Water flows and tank levels. Steam pressures and temperatures. Various measurements for general supervisory control.

For complete Instrumentation on the Works Consult **ELECTROFLO METERS CO. LTD**

Head Office: ABBEY ROAD, PARK ROYAL, LONDON, N.W.10.
Factories: ABBEY ROAD, LONDON, AND MARYPORT, CUMBERLAND.

Air Comfort ALL THE YEAR with AEROTHERM

and maximum economy too!

All-the-year round health and comfort for factory workers from one fully automatic unit! Correct air temperature and conditioning in winter, vital ventilation in summer . . . and very high fuel economy—that's what the AEROTHERM gives you! Write in to-day for full details.

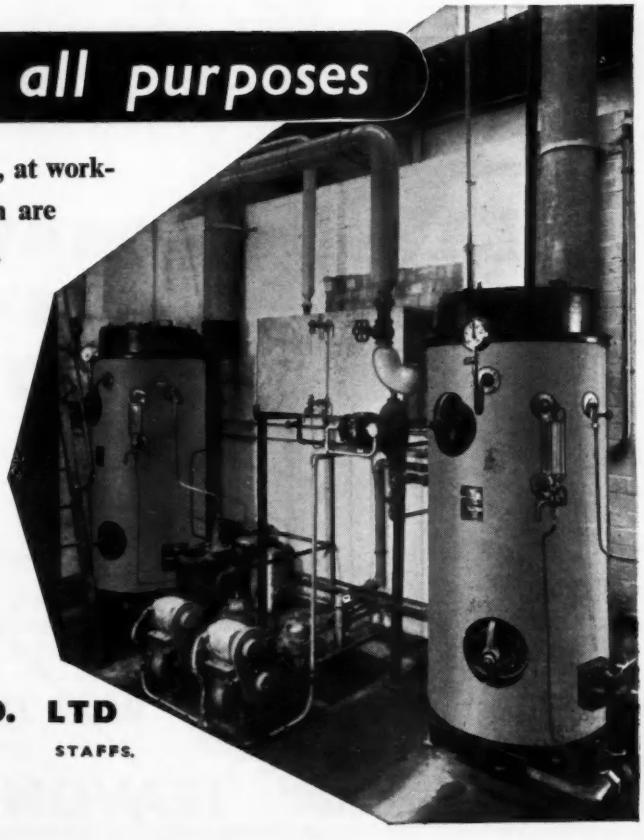
Suspension or stand mounting.

50 YEARS CONTINUOUS SERVICE TO THE GAS INDUSTRY

RADIANT HEATING LTD

RADIANT WORKS, BARNSBURY PARK, LONDON, N.1 Telephone: North 1677 (3 lines)

STEAM — for all purposes



Outputs from 30 to 400 lbs. steam per hour, at working pressures up to 100 lbs. per square inch are available for all industrial steam processes.

FULLY AUTOMATIC ★ LONG LIFE
EASY MAINTENANCE ★ QUICK STEAMING

V. S. SERIES
GAS - FIRED BOILERS

Among the many applications of this highly efficient equipment are Dairy Sterilisation, Bottle Washing, Steam Presses, Vulcanizing, Hospital and Laundry Work, Cooking, Heating, etc.

Full technical data from:

BROCKHOUSE HEATER CO. LTD

VICTORIA WORKS, WEST BROMWICH, STAFFS.

London Office: 25, Hanover Square, W.1.

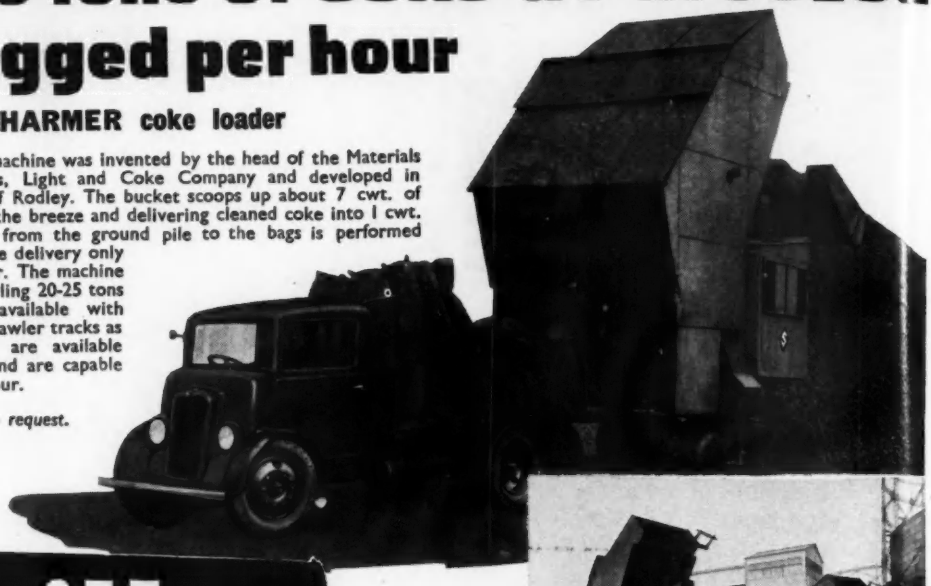
B

20 to 25 tons of coke de-breezed and bagged per hour

with the SMITH HARMER coke loader

This modern coke loading machine was invented by the head of the Materials Handling Dept. of the Gas, Light and Coke Company and developed in collaboration with Smiths of Rodley. The bucket scoops up about 7 cwt. of coke at a time, separating the breeze and delivering cleaned coke into 1 cwt. bags. The whole operation from the ground pile to the bags is performed as quickly and cheaply as the delivery only from a modern coke hopper. The machine illustrated is capable of handling 20-25 tons of coke per hour. It is available with either pneumatic tyres or crawler tracks as desired. Larger machines are available mounted on crawler tracks and are capable of handling 40-45 tons per hour.

Illustrated leaflet available on request.



Smiths OF RODLEY

THOMAS SMITH & SONS (RODLEY) LTD · RODLEY · LEEDS

SENSITIVE IN ALL CONDITIONS!

JEAVONS

CRAWFORD DISTRICT GOVERNORS...

- Absolute accuracy of controlled pressure under the most adverse conditions of inlet pressure fluctuations.
- Designed for accessibility and ease of maintenance.
- Generous diaphragm areas throughout the range of sizes.

Write for brochure 49/4/CS.

JEAVONS ENGINEERING Co.,

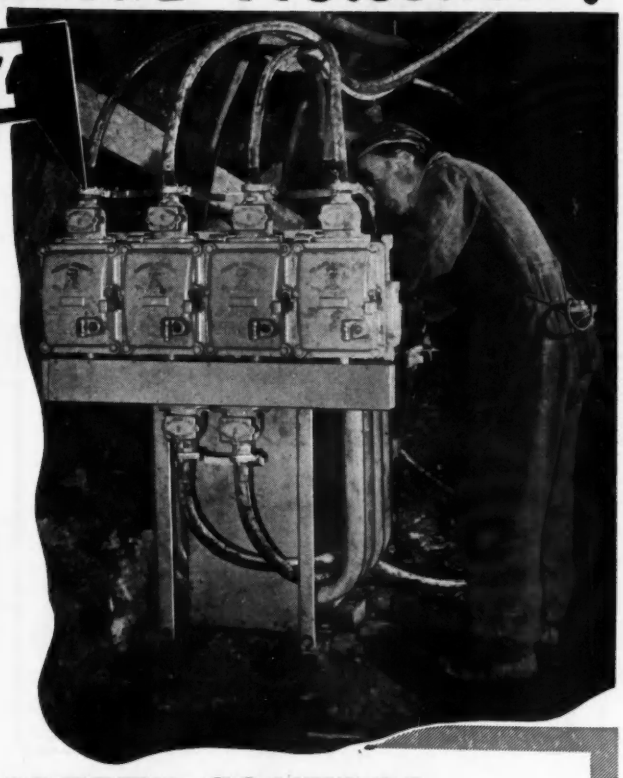
TIPTON · STAFFS · (PROPS: E. E JEAVONS & Co. Ltd) · 'Phone: TIPTON 2161 'Grams: · PIPELINES · TIPTON

Full EARTH-LEAKAGE Protection !

SAFETY

he first consideration of this

LIGHTING DISTRIBUTION BOARD



The Siemens-Schuckert Flameproof Distribution Board, built up from individual units, not only gives automatic overload protection, but also incorporates full series Earth Leakage protection.

This is the only Lighting Distribution Board providing earth leakage protection, certified for Groups I and II gases.

No greater tribute could be paid to the safety afforded by the Siemens-Schuckert Distribution Board than to have been selected for use in the first underground television broadcast from a coalmine. This equipment was installed to give adequate electrical protection to the floodlighting and also to comply with Mine safety requirements.

Photograph by HAYWARD SMEAD, *"Coal" Magazine.*

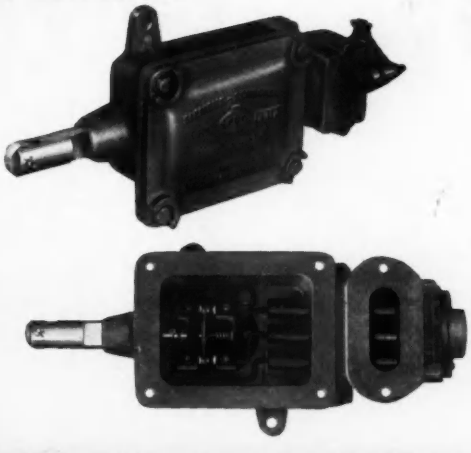
FOR AUTOMATIC or SAFETY CONTROL —a new Flameproof Limit Switch

Machinery operating in gaseous or dust-laden atmospheres often requires an automatic stopping and starting switch or an emergency stop to operate when a certain limit is reached.

This new Flameproof Limit Switch meets that need and has been certified for both Group I and Group II gases.

A similar switch for Group III gases will shortly be available.

Write for detailed specification.



SIEMENS-SCHUCKERT

(GREAT BRITAIN) LIMITED

FARADAY WORKS · GREAT WEST ROAD · BRENTFORD · MIDDLESEX

Telephone : EALING 1171-6. Telegrams : Siemensdyn, Brentford, Hounslow.

BIRMINGHAM : Tel. Midland 2082. **CARDIFF.** **GLASGOW**: Tel : Central 0171.

MANCHESTER : Tel : Chorlton 1467. **NEWCASTLE** : Tel : 28617 **SHEFFIELD** : Tel : 61564.

Smees * S. 67

Specialists in the repair of Reinforced Concrete Structures, etc.

also

LININGS FOR STEEL BUNKERS.

THE

GUNITE

CONSTRUCTION CO. LTD

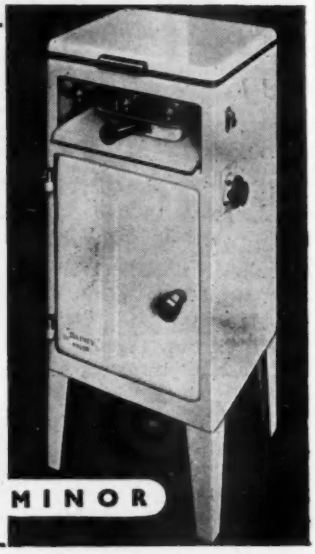
WESTERN HOUSE, HITCHIN, HERTS.

BIG Capacity for LITTLE Kitchens

Especially suited to the kitchens of flats and small houses, this highly efficient cooker provides utmost cooking capacity in the least possible space. Cast iron construction ensures strength and durability and reduces maintenance costs to a minimum, thus making the Dainty Minor particularly suitable for simple hire or hire purchase.

Approved and adopted by leading gas boards

The **Dainty** MINOR

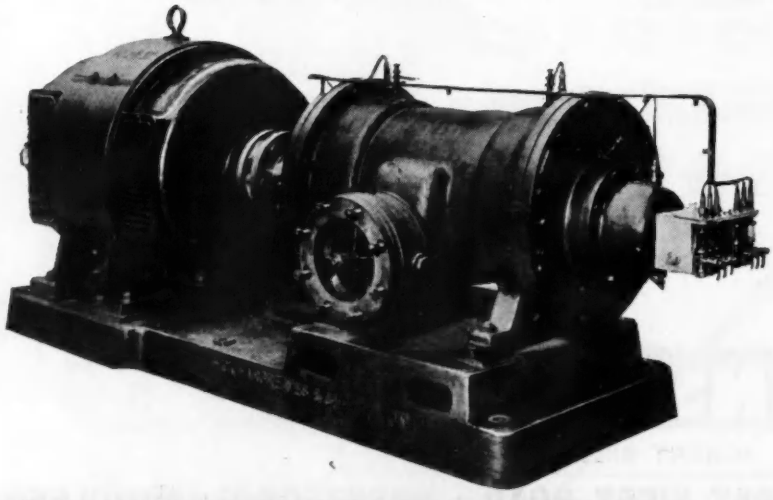


R. RUSSELL & SONS, LTD., DERBY

Agents for Scotland and Northern Ireland:

JAMES R. THOMSON & CO. LTD., 41, YORK STREET, GLASGOW, C.2

ROTARY COMPRESSORS



OUR ROTARY COMPRESSOR HAS MANY ADVANTAGES IN DESIGN AND PERFORMANCE

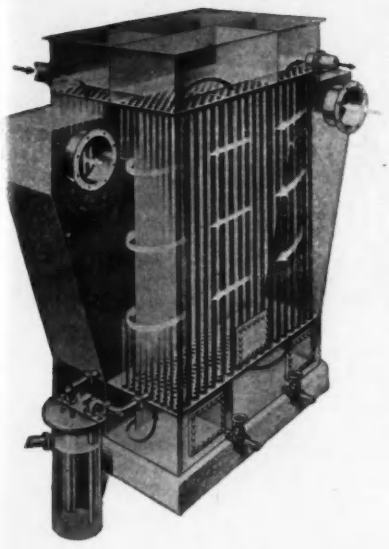
EASE OF INSTALLATION
MINIMUM MAINTENANCE
NO SUCTION VALVES.
METALLIC GLANDS.
ROLLER BEARINGS.
SILENCE IN OPERATION
RETENTION OF INITIAL HIGH PERFORMANCE

HICK HARGREAVES

AND COMPANY LTD BOLTON

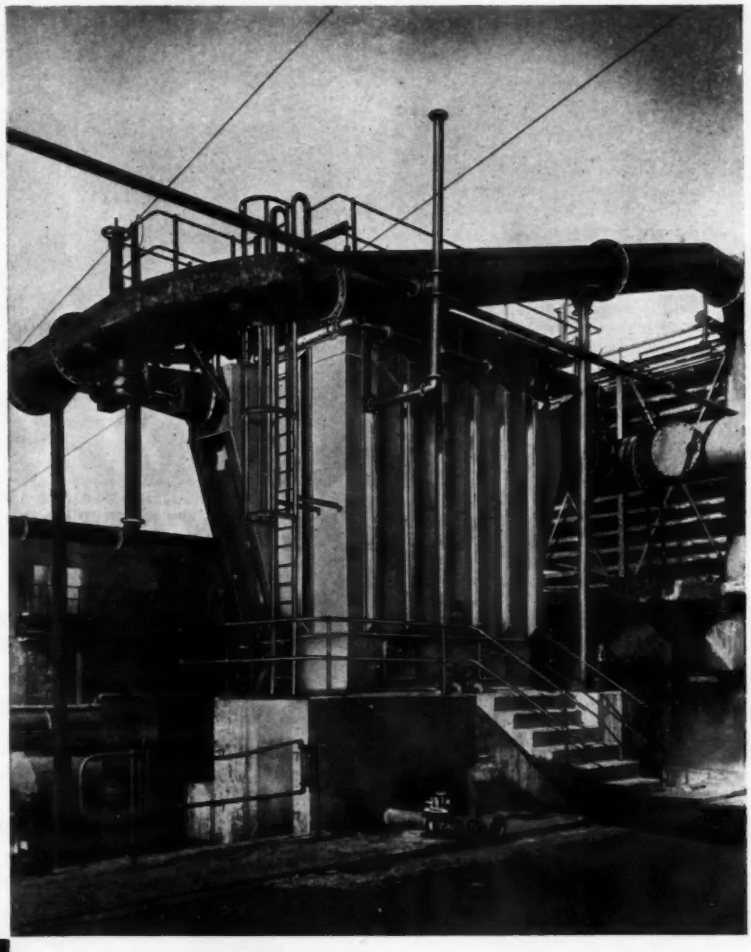
The illustration shows an air-cooled Compressor for 15 p.s.i.g. Also available as a water-cooled machine for h.p. distribution.

H.106



THE WHESSOE CROSS-FLOW CONDENSER

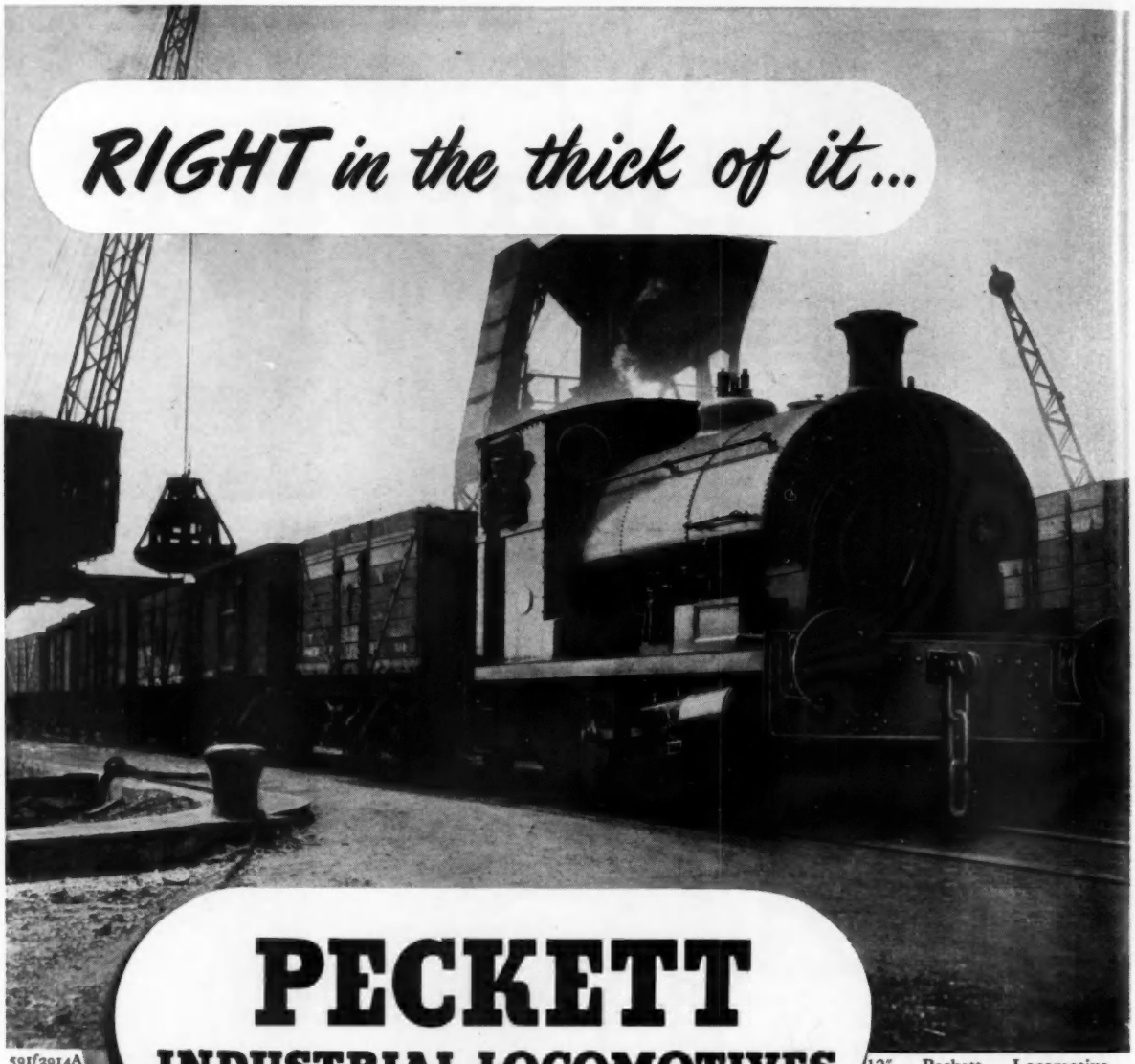
THE Whessoe Cross-Flow Condenser, a new and efficient unit for cooling gas, is now in operation. The first to be commissioned was built for Consett Iron Co. Ltd. Design capacity was 8.0 million cubic feet of Coke Oven Gas per day. Other units of this type have been supplied to Area Gas Boards.



WHESSOE LIMITED

DARLINGTON & LONDON

W.46



591/2914A

12" Peckett Locomotive working at Dibles Wharf for Messrs. Southern Wharves Limited

PECKETT
INDUSTRIAL LOCOMOTIVES

Right in every sense . . . in design, in robust construction and for low upkeep backed by efficient parts replacement service. . . . Peckett locomotives give unflagging service under the most arduous conditions.

Standard designs are fulfilling operational requirements in many industries, including Steel Works, Ship Yards, Quarries and the Nationalised Coal, Gas and Electricity Undertakings, whilst special designs serve the feeder lines of Industry on every continent.

London Representatives:
Ferguson & Palmer, 9 Victoria Street, Westminster, S.W.1.

PECKETT & SONS LTD., ATLAS LOCOMOTIVE WORKS, BRISTOL, ENGLAND

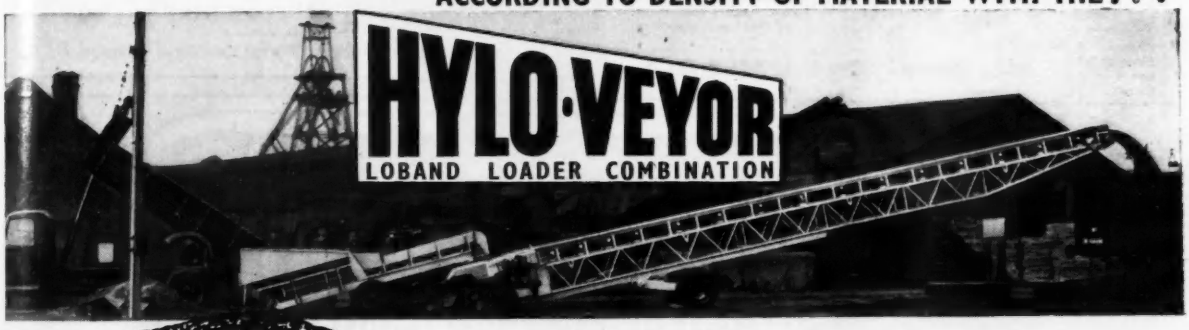
Telephone: Fishponds Bristol 55346 Telegrams: Peckett, Bristol

JOHNSON

MECHANICAL HANDLING PLANT

UP TO 200 TONS PER HR.

ACCORDING TO DENSITY OF MATERIAL WITH THE . . .



NO TROUBLESOME CHAINS OR SPROCKETS

VARIABLE ELEVATION THROUGH WIDE RANGE STOCKPILING UP TO HEIGHTS OF 30FT. WITHOUT SECOND HANDLING

Illustration shows a 48 ft. centres × 24 in. belt HYLO-VEYOR LOBAND-LOADER COMBINATION transferring washed slack direct from tipping truck to railway waggon at the rate of 150 T.P.H. FIXED CONVEYORS can also be supplied to feed concrete aggregates to batch mixing plants. Power units can be electric motor, petrol or Diesel engine.
SECTIONAL AND FIXED CONVEYORS We manufacture and supply these to Quarries, Sand and Gravel Plants, etc. Please apply for our new General Conveyor Folder. CF/43

WE MANUFACTURE PORTABLE CONVEYORS from 20FT. to 62FT. CENTRES GIVING DISCHARGE HEIGHTS UP TO 30FT.

'L.A.' type CONVEYOR

WITH 25ft CENTRES and DISCHARGE HEIGHT VARIABLE FROM 5'10" to 15'.

NEW! LIGHT-WEIGHT DESIGN

MOVED EASILY by ONE MAN

Manufactured in 16" and 24" belt widths with capacities up to 100 T.P.H. according to density of material. Drive by Electric Motor, Petrol or Diesel engine. Direct through shaft, flexible coupling and gear box to bottom drum. All chains and sprockets eliminated. Twin hydraulic jacks give easy control of discharge height throughout its range. **We also manufacture a light, portable (Type L) conveyor** with a fixed discharge point. Both machines can be towed to and from site.

C.H. JOHNSON (Machinery) LTD., J 2 **ADSWOOD, STOCKPORT, Ches.**
PHONE: STO 2642/5 GRAMS: 'Machinery' Stockport Also at LONDON (Prospect 7671) GLASGOW (Kilmacolm 558).

703

THOMAS BUGDEN & CO.

India-Rubber and Airproof Manufacturers and General Contractors.
LARGEST MANUFACTURERS OF GAS MAIN BAGS.
Telegrams—"AIRPROOF, BARB, LONDON." Telephone—6147 CLERKENWELL

Contractors to H.M. Government

Gas Bags for Repairing Mains

PATENTEES OF THE
DENMAR BAG
Impervious to Main Liquor and Climatic Influences.

Round or Cylinder Shape.

Pull-through and Expanding MAIN STOPPERS.

All types of INDIA-RUBBER BOOTS.

DRAIN RODS AND WHALE-BONE BRUSHES.

HOSE AND TUBING FOR ALL PURPOSES.

Stokers' Mitts and Gloves of every description.

Contractors' & Miners' Woollen Jackets, Trousers, Hats, &c. **244, Goswell Road, LONDON, E.C.1.**

COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.
See our Advertisement Next Week.
REAVELL & CO. LTD. IPSWICH.

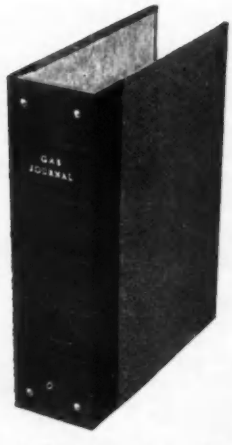
CASES FOR BINDING
Quarterly Volumes of the 'Gas Journal'
5/- each, post free
Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.

WESTWOOD & WRIGHTS
LIMITED
BRIERLEY HILL, STAFFS.
GASHOLDERS · PURIFIERS · WASHERS
CONDENSERS · CASTINGS · STEELWORK
GAS VALVES · WELDED PIPES

Bind your JOURNAL each week

No loose copies to be mislaid

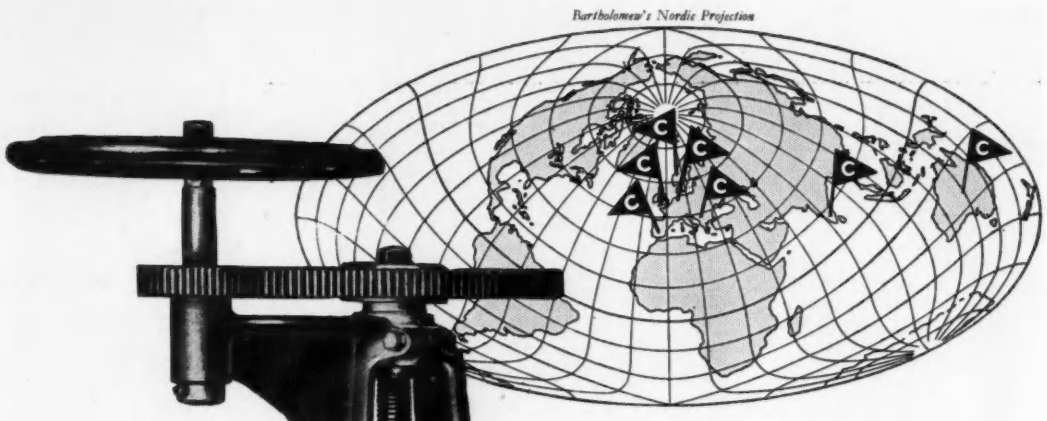
We offer Journal readers a simple method of temporarily binding their copies as received week by week. No time lost searching for a particular issue; Journals removed and replaced in a few seconds. Designed to hold 13 issues, and whether completely or only partially filled the book effect is always maintained.



Gold lettered on the spine complete with instruction sheet.

Price 12/6 each plus 9d. postage.

Obtainable from:
WALTER KING, Ltd., 11, Bolt Court, Fleet St., London, E.C.4



All over the world you will find Crane valves and fittings

Crane equipment has been fitted in many large oil refineries recently constructed in Holland, Belgium, Spain, Yugoslavia, India, Australia—as well as in Britain herself. For wherever valves and fittings are needed for refineries and power-plants, the oil industry turns to Crane. Crane makes many types of valve—from $\frac{1}{8}$" to 16" size—to British and American standards. With its allied production of fittings, Crane offers a wide range of equipment for controlling the flow of liquids and gases. **If you need valves, of any type or size, ask Crane first.**

CRANE

VALVES OF GUN METAL, CAST IRON AND CAST STEEL

CRANE LTD. 45-51 LEMAN STREET, LONDON E1 Works: IPSWICH *Branches: Birmingham, Brentford, Bristol, Glasgow, Manchester*

Re-planning for Future Development

It would be difficult to find a more apt analogy for constructive dismantling than that afforded by our photograph. Thriving industries, no less than growing lads, progressively need more and more room for expansion; and if out-grown, out-dated plant and equipment can be reconstructed to serve for another term of usefulness, then so much the better. Wards' Dismantling Department specialises in just this type of work—dismantling and site clearance, reconstruction and installation of one item or of an entire production unit —and half-a-century's experience ensures a smooth running sequence of operations no matter how complex the problems involved.

for constructive advice on dismantling **THOS. W. WARD LTD**

DISMANTLING

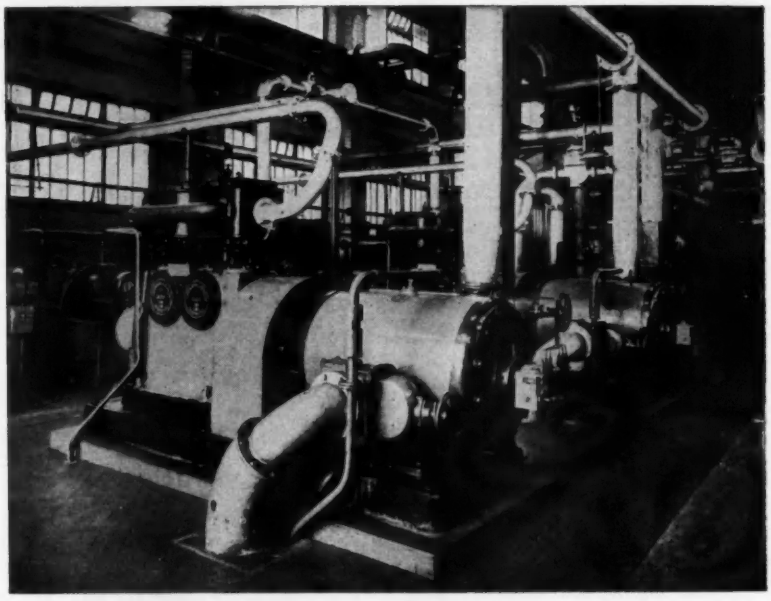
HEAD OFFICE · ALBION WORK · SHEFFIELD

London Office : Brettenham House, Lancaster Place, Strand, W.C.2

and at BIRMINGHAM, BRISTOL, GLASGOW, LIVERPOOL, MANCHESTER, MIDDLESBROUGH, NEWPORT

D/12

ROTARY GAS BOOSTERS



STEAM ENGINE DRIVEN ROTARY GAS BOOSTERS

in service 24 hours per day boosting about 1,250,000 cubic feet per day of purified coke oven gas to 13 lbs. per square inch pressure for long distance transmission from Bircotes near Doncaster to Worksop.

By courtesy of the National Coal Board (Carbonisation Branch East Midlands Division)

WHITTAKER HALL & CO. (1929) LTD.

DEPT. G.J., BLACK LANE WORKS, RADCLIFFE, MANCHESTER

Telephone: Radcliffe 2421-2 London Office: 119, Victoria Street, S.W.1. Tel. VICtoria 2612. Telegrams: Clutch Radcliffe, Manchester

THE SIMON PATENT AUTOMATIC COKE WEIGHER

Approved by the Board of Trade and stamped by the Weights and Measures Authorities.

Capacity: 28 to 112 lbs. per discharge (nett).

Speed of Weighing: Up to six weighings per minute.

Guaranteed accuracy and continuity of operation.

Machines may be seen working by appointment.

RICHARD SIMON & SONS LTD.

PHOENIX WORKS · BASFORD · NOTTINGHAM

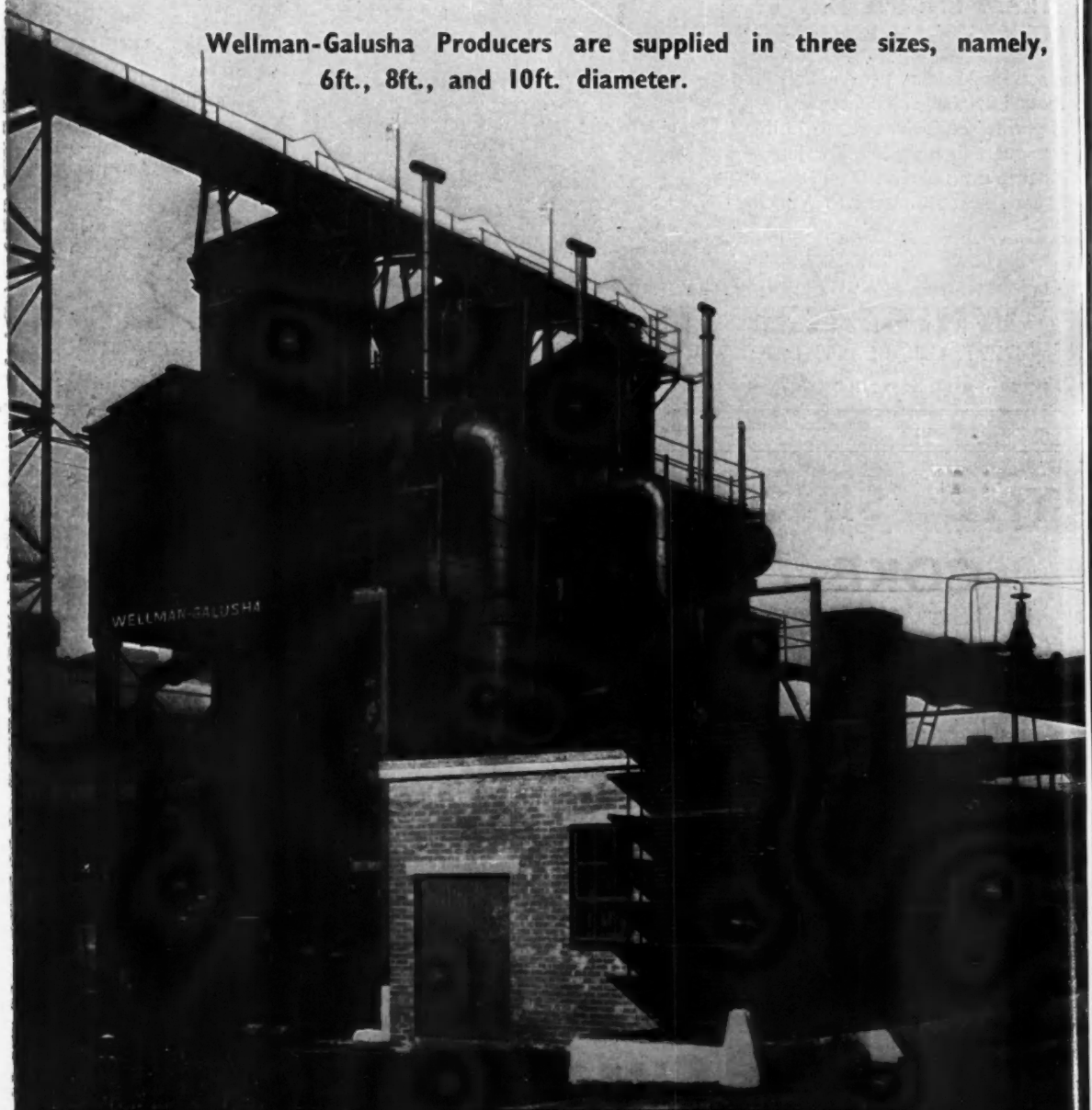
Wellman-Galusha Gas Producers

generate

High Quality Gas from Low Grade Fuels

A battery of three 8ft. diameter Wellman-Galusha Gas Producers, equipped with fuel storage bins and Gas Cleaning Plant, for the efficient gasification of anthracite, coke or coke breeze.

Wellman-Galusha Producers are supplied in three sizes, namely, 6ft., 8ft., and 10ft. diameter.



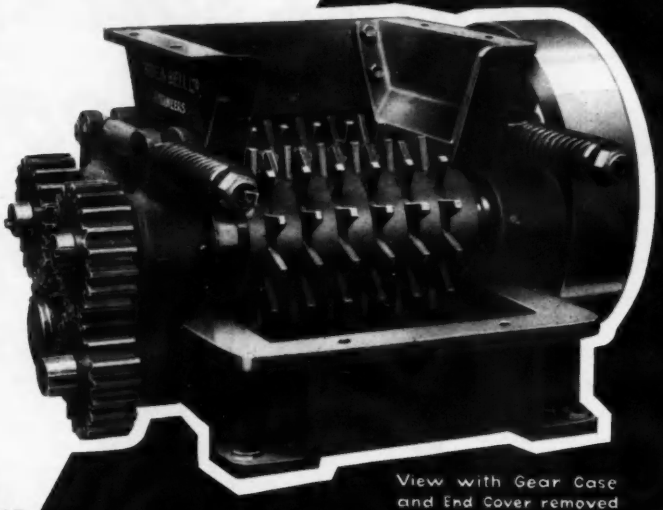
THE WELLMAN SMITH OWEN ENGINEERING CORPN. LTD.
PARNELL HOUSE, WILTON ROAD, LONDON, S.W.1 WORKS: DARLASTON, SOUTH STAFFS.

R&B

COKE CUTTING MACHINE

TWO ROLL

ADJUSTABLE SPRING-LOADED ROLLS



View with Gear Case and End Cover removed

The R & B 2-roll machine is a first-class job in every way: it is heavily constructed from the best materials and is the result of many years' experience.

Cardinal features include:— adjustable cutters, easy accessibility, renewable roller bearings (dust sealed), grease-gun lubrication and belt or vee rope drive.

Please write for full specification.

Ride & Bell Ltd.,

RETFORD, NOTTS. Grams: Ridbel, Retford, Notts. Phone: Retford 180.

WEIR Electrofeeders

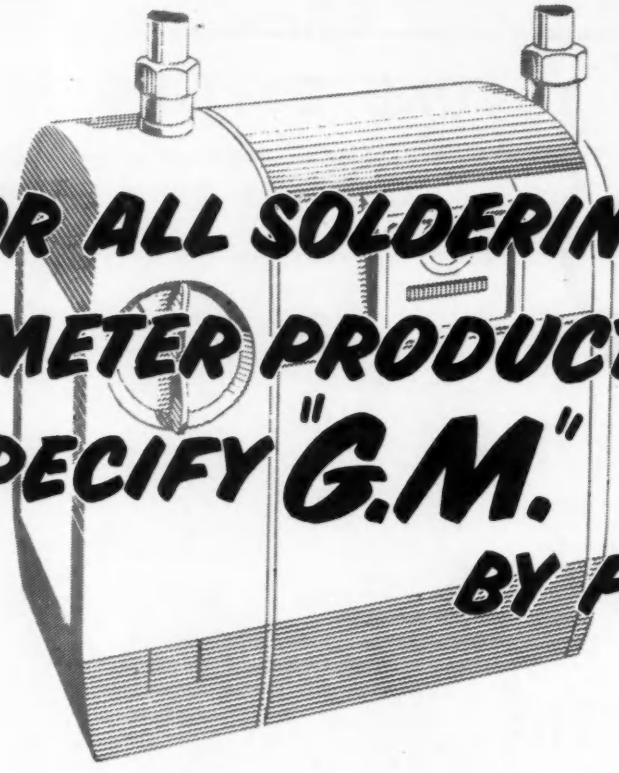
Weir Electrofeeders meet every requirement of modern boiler feeding practice. They are inherently stable, unaffected by large temperature changes, in perfect hydraulic balance, and have effectively cooled glands. In design and construction, Weir Electrofeeders are based on unrivalled technical and practical experience. We specialise in boiler feeding and can advise on all power plant auxiliaries and type of pump most suitable.

Write for Booklet No. 38.

FEED HEATERS
EVAPORATORS
AIR PUMPS
DE-AERATORS
FEED REGULATORS

G. & J. WEIR LTD.
CATHCART : GLASGOW

Telephone: MERRYLEE 7141 Telegrams: "GIWEIR, TELEX, GLASGOW"



FOR ALL SOLDERING IN GAS-METER PRODUCTION SPECIFY "G.M." BY FRY'S

Did you know that FRY'S produce solders ideally suited for Gas Meter production? Known as "G.M." and "G.M.I" they have been used in Gas Meter manufacture and repair work for over 25 years! The reasons for their success are not hard to find, for they are rich in tin and combine low melting points with rapid adhesion to surfaces, ensuring speedy, economical production. FRY'S "G.M." solders are consistent in quality and of guaranteed purity. For tinning and sweat soldering work FRYOLUX Solder paint may be specified, and we recommend Blowpipe Solder Strips for Gas Fitters. These products are a few of the wide range produced by FRY'S METAL FOUNDRIES LTD. Why not write for full list to-day?

ADVICE

For impartial advice on any soldering problem, please contact us. You'll find us pleased to assist you, and well qualified to advise. May we hear from you?

SOLDERING SIMPLY MEANS FRY'S

Export enquiries invited.

FRY'S Metal Foundries Limited

Tandem Works, Merton Abbey, S.W.19 **Telephone: MITcham 4023**

and at MANCHESTER · GLASGOW · BRISTOL · BIRMINGHAM · DUBLIN

INDEX TO 'JOURNAL' ADVERTISERS

A

A.C.E. Machinery, Ltd. ... ... PAGE
Abbot... Birks & Co., Ltd. ... ...
Accur... Recording Instrument Co. ... ...
Acme Wringers, Ltd. ... ...
Aerog... Co., Ltd. ... ...
Aerog... ph Co., Ltd. 313
Alder... Mackay, Ltd. 359
Allan... aylor (Engineers), Ltd. ... .
Amal... td. ... ...
Ascot... ias Water Heaters, Ltd. ... ...
Ascot... ias Water Heaters, Ltd. (F.A. Neat) ...
Ashm... e, Benson, Pease & Co. ... ...
Ashw... th, Thos., & Co., Ltd. 370
Aspin... d's (Paints), Ltd. ... ...
Assoc... ted Lead Manufacturers, Ltd. ... ...
Assoc... ted Lead Manufacturers, Ltd. (Rustodian)
Atlas... reservative Co., Ltd. 309
Autoc... ntrol Boilers, Ltd. ... ...
Autom... atic Telephone & Electric Co., Ltd. ...
Autom... otive Products, Ltd. ... ...
Averil... C. R., Ltd. ... ...

B

Bale... Church, Ltd. 369
Balfour, Henry, & Co., Ltd. ... ...
Begwi... co Meters, Ltd. ... ...
Belgr... ve Buyers. ... ...
Bell's Asbestos & Engineering Ltd. ... ...
Benham & Sons, Ltd. ... ...
Blakeley Firth, Sons & Co., Ltd. 310
Booth, John, & Sons (Bolton), Ltd. ... ...
Bratt Colbran, Ltd. ... ...
Bray, George, & Co., Ltd. ... ...
Bray, W. E., & Co., Ltd. ... ...
British Flint & Cerium Manufacturers, Ltd. ...
British Gas Purifying Materials Co. ... ...
British Oxygen Co., Ltd. ... ...
British Rototherm Co., Ltd. 314
British Thermostat Co., Ltd. ... ...
British Thomson Houston, Ltd. ... ...
British Vacuum Cleaner & Engineering Co., Ltd.
Broadbent, Thomas, & Sons, Ltd. ... ...
Brockhouse Heater Co., Ltd. 321
Broom & Wade, Ltd. ... ... Cover IV
Brown, J., & Co., Ltd. ... ...
Bugden, Thos., & Co. 328

C

Cambridge Instrument Co., Ltd. 359
Cannon (G.A.), Ltd. ... ...
Cementation Co., Ltd. 306
Chamberlain Industries, Ltd. ... ...
Chesside Engineering Co. Ltd., ...
Chemical Engineering Wiltons, Ltd. ... ...
Chemical & Insulating Co., Ltd. ... ...
Cinema-Television, Ltd. ... ...
Clapham Bros., Ltd. ... ...
Clayton, Son & Co., Ltd. ... ...
Clifford Engineering Co., Ltd. ... ...
Cochranes (Middlesbro') Foundry Ltd. ... ...
Cohen, George, Sons & Co., Ltd. ... ...
Concrete Proofing Co., Ltd. 337
Consolidated Pneumatic Tool Co., Ltd., ...
Cort, Robert, & Son, Ltd. ... ...
Cox & Danks, Ltd. ... ...
Crane, Ltd. 329
Crene & Taylor, Ltd. 316
Crossley Bros. ... ...
Curtis, A. L., & Co. ... ...
Cutler, Samuel, & Sons, Ltd. ... ...

D

Davenport Engineering Co., Ltd. ... ...
Davey, Paxman & Co., Ltd. 318
De la Rue, Thomas, & Co., Ltd. (Gas Group) ...
Dempster, R. & J., Ltd. ... ...
Dempster, Robert, & Sons, Ltd. ... ...
Derbyshire Silica Firebrick Co., Ltd. ... ...
Diaphragm & General Leather Co., Ltd.... ...
Dick, R. & J., Ltd. ... ...
Donkin (The Bryan) Co., Ltd. ... ... Cover II
Douglas, Robert M., (Contractors), Ltd. ...
Douglas, William, & Sons, Ltd. ... ...
Drakes, Ltd. ... ...
Dresser Manufactures (England) Ltd. 310
Drew, H. B., Ltd. ... ...
Dunlop & Ranken, Ltd. ... ...
Dunlop Rubber Co., Ltd. (Gen. Rubber Goods Div.) ... ...

E

E. B. Refractory Cement Co., Ltd. ... ...
Edgar, William, & Son, Ltd. ... ...
Electroflo Meters Co., Ltd. 320
Electrolux, Ltd. ... ...
Elliott Bros. (London), Ltd. ... ...
English Electric Co., Ltd. ... ...
Ether, Ltd. ... ...
Evershed & Vignoles, Ltd. ... ...
Ewart Chainbelt Co., Ltd. ... ...
Expanded Metal Co., Ltd. ... ...

F

Flavel, S., & Co., Ltd. 351
Fluxite, Ltd. ... ...
Fowler, John, & Co. (Leeds), Ltd. ... Cover II
Franki Compressed Pile Co., Ltd. ... ...

Fry's Metal Foundries, Ltd. 334
Fyffe & Co., Ltd. ... ...

G

Gas Chambers & Coke Ovens, Ltd. ... ...
Gas Purification & Chemical, Ltd. 369
General Descaling Co., Ltd. ... ...
General Electric Co., Ltd. ... ...
General Gas Appliances, Ltd. ... ...
Gibbons Bros., Ltd. ... ...
Gibson, John, & Son, Ltd.... ... ...
Glover, George, & Co., Ltd. ... ...
Glover, Thomas, & Co., Ltd. 338
Goodall Clayton & Co., Ltd. ... ...
Goodyear Mechanical Goods ... ...
Grant & West, Ltd.... ... ...
Graphite Products, Ltd. ... ...
Green & Boulding, Ltd. ... ...
Gunite Construction Co., Ltd. 324

H

Hamilton, A. H., & Co., Ltd. 314
Hardman & Holden, Ltd. 308
Harris & Pearson, Ltd. ... ...
Harrisons (London), Ltd. ... ...
Harvey, G. A., & Co. (London), Ltd. ... ...
Hick Hargreaves & Co., Ltd. 324
Hilmor, Ltd. ... ...
Hills (West Bromwich), Ltd. ... ...
Holmes, W. C., & Co., Ltd. 371
Honeywell-Brown, Ltd. ... ...
Horseley Bridge & Thomas Piggott, Ltd. ...
Horstmann Gear Co., Ltd. ... ...
Howden, James, & Co., Ltd. ... ...
Humphreys & Glasgow, Ltd. 336

I

Ideal Boilers & Radiators, Ltd. ... ...Facing P.345
I.C.I., Ltd. (Metals Division) ... ...
Ingham, John, & Sons, Ltd. ... ...

J

Jeavons, E. E., & Co., Ltd. ... ...
Jeavons Engineering Co. 322
Jenkins, W. J., & Co., Ltd. ... ...
Jobling, James A., & Co., Ltd. ... ...
Johnson, C. H. (Machinery) Ltd. 327

K

Keay, E. C. & J., Ltd. ... ...
Keith Blackman, Ltd. 372
Kings Patent Agency Ltd. 370
King, Walter, Ltd. 328,360,368,369
Kirk & Co. (Tubes), Ltd. ... ...
Kirkham Hulett & Chandler, Ltd. ... ...

L

LaFarge Aluminous Cement Co., Ltd. ... ...
Laidlaw, R., & Son (Edin.), Ltd. 314
Lamont, James H., & Co., Ltd. ... ...
Lanarkshire Bolt & Rivet Co., Ltd. ... ...
Lancashire Dynamo & Crypto, Ltd. ... ...
Le Bas Tube Co., Ltd. ... ...
Lionweld, Ltd. ... ...
Lind, Peter, Ltd. ... ...

M

Macpherson, Donald, & Co., Ltd. ... ...
Magnetic Valve Co., Ltd. ... ...
Main, R. & A., Ltd. 362,363
Mareo Conveyor & Engineering Co., Ltd. ...
Mavor & Coulson Ltd., ...
Meigh Castings, Ltd. 318
Meltham Silica Fire Brick Co., Ltd. ... ...
Mercol Products, Ltd. 318
Messenger & Sons, Ltd. ... ...
Metropolitan Leather Co., Ltd. ... ...
Milnes Meters, Ltd. 306
Mint, Birmingham, Ltd. ... ...
Mitcham Smelters, Ltd. ... ...
Mitchell, H., & Co. ... ...
Moler Products, Ltd. ... ...
Monitor Engineering & Oil Appliances, Ltd. ...
Monk, A., & Co., Ltd. ... ...
Morris Commercial Cars, Ltd. ... ...

N

National Benzole Co., Ltd. ... ...
National Enamels, Ltd. ... ...
New Conveyor Co., Ltd. ... ...
Newton Chambers & Co., Ltd. ... ...
Norwest Construction & Co., Ltd. 305
Nu-Swift, Ltd. 369

O

Olding, Jack, & Co., Ltd. ... ...
Oxley Engineering Co., Ltd. ... ...

P

Parkinson & Cowan (Gas Meters), Ltd. 338
Parkinson Stove Co., Ltd. 354
Pass, E., & Co., Ltd. ... ...
Peckett & Sons, Ltd. 326
Peebles & Co., Ltd. 312
Pegson, Ltd. ... ...
Perl Controls, Ltd. ... ...
Plus Gas Co., Ltd. ... ...
Power Gas Corporation, Ltd. ... ...

Pratt Engineering Co. ... ... PAGE
Press, William, & Son, Ltd. ... ...
Pulsometer Engineering Co., Ltd. ... ...

R

R.T.S.C. Home Sales, Ltd. ... ...
Radiant Heating, Ltd. 321
Radiation, Ltd. 352,353
Rawlplug Co., Ltd. ... ...
Reavell & Co., Ltd. 328
Richmond Welding Co. 369
Ride & Bell Ltd. 333
Riley, A. J. & Son, Ltd. ... ...
Roberts, R. E., & Sons, Ltd. ... ...
Robinson, J. H., & Co. (Liverpool), Ltd. ...
Royston, Geo., & Son, Ltd. ... ...
Russell Bros. (Walsall), Ltd. 372
Russell, R., & Sons, Ltd. 324

S

Salter, T. E., Ltd. ... ...
Scottish Non-Ferrous Tube Industries, Ltd. ... 372
Senior Economisers, Ltd. ... ...
Siebe Gorman & Co., Ltd. ... ...
Siemens-Schukert (Great Britain) Ltd. 323
Sigma Instrument Co., Ltd. ... ...
Sigmund Pumps Ltd. 315
Simon-Carves, Ltd. ... ...
Simon, Richard, & Sons, Ltd. 331
Sisson, W., & Co., Ltd. ... ...
Smith Meters, Ltd. 311
Smith, Thos., & Sons (Rodley), Ltd. 322
Spencer Bonecourt, Ltd. ... ...
Sperryn & Co., Ltd. ... ...
Stanton Ironwork Co., Ltd. ... ...
Staveley Iron & Chemical Co., Ltd. ... ...
Stein, John G., & Co., Ltd. ... ...
Stelcon (Industrial Floors), Ltd. ... ...
Stewart & Gray, Ltd. ... ...
Stewarts & Lloyds, Ltd. ... ...
Stoves, Ltd. ... ...
Strachan & Henshaw, Ltd.... ... ...
Stringer Bros. ... ...
Sugg, Wm., & Co., Ltd. 319
Sutcliffe Speakman & Co., Ltd. ... ...
Sutherland, A. G., Ltd. ... ...

T

Thermal Syndicate Ltd. ... ...
Thomas & Bishop, Ltd. ... ...
Thomas (Richard) & Baldwins, Ltd. ...
Thompson, John, Conveyor Co. ... ...
Thorp, Thomas, & Co., Ltd. ... ...
Tucker Eyelet, Geo., Co., Ltd. ... ...
Tully, Sons & Co., Ltd. ... ...
Turners Asbestos Cement Co., Ltd. ... ...

U

Underpressure Engineering Co., Ltd. 370
United Kingdom Construction & Engineering Co., Ltd. ... ...

V

Vale, Thomas, & Sons, Ltd. ... ...
Visco Engineering Co., Ltd. ... ...
Vulcan Stove Co., Ltd. ... ...

W

Wakefield, C. C., & Co., Ltd. ... ...
Wakelin, F. H., Ltd. ... ...
Walker, C. & W., Ltd. ... ... Cover I
Walker, Crosweller & Co., Ltd. ... ...
Waller, George, & Son, Ltd. ... ...
Ward, Thos. W., Ltd. 330
Weatherill, F. E., Ltd. ... ...
Weir, G. & J., Ltd. 333
Wellington Tube Works, Ltd. ... ...
Wellman Smith Owen Engineering Corpn., Ltd. 332
West's Gas Improvement Co., Ltd. ... Cover III
West Hunwick Silica & Firebrick Co., Ltd. ...
West's Piling & Construction Co. ... ...
Westwood & Wrights, Ltd. 328
Whessoe, Ltd. 325
Whittaker Hall & Co., (1929) Ltd. 331
Wilkes, A. H., & Co., Ltd. ... ...
Willey & Co., Ltd. 307
Williams, John E., Ltd. ... ...
Williamson Cliff, Ltd. ... ...
Wilson, George, Gas Meters, Ltd. 317
Winn & Coales, Ltd. ... ...
Woodall-Duckham Construction Co., Ltd., Facing p.344
Wood, Hugh, & Co., Ltd. ... ...

Y

Yorkshire Copper Works, Ltd. ... ...

Appointments Vacant 369,370
Appointment Wanted ... ...
Contracts Open ... ...
Educational ... ...
Fellowship ... ...
Miscellaneous 370
Notice ... ...
Patents 370
Plant Wanted ... ...
Plant For Sale 370
Publications ... ...

HUMPHREYS-GLASGOW OIL GAS PLANT

The Humphreys-Glasgow Oil Gas Plant, utilising the ONIA-GEGI catalytic gasification process, produces a Towns Gas of normal characteristics from Heavy Oil.

The efficiency and reliability of this plant have been firmly established.

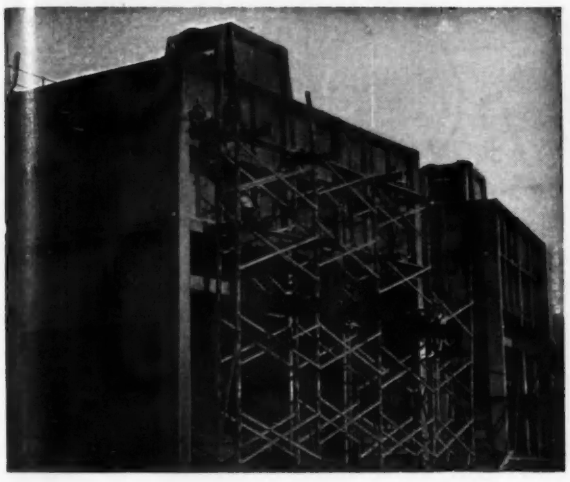
HUMPHREYS & GLASGOW LTD

HUMGLAS HOUSE · CARLISLE PLACE · LONDON, S.W.1

Telephone: VICtoria 3961

ESTABLISHED 1892

Gunite



One of the reinforced concrete structures reconditioned with Gunite for the City of Carlisle Gas Undertaking.

Gunite—concrete applied by air pressure—has numerous applications where its great density and extreme adhesion have exceptional value.

For repairing reinforced concrete it has particular merit, as, due to the method of application, a uniform density and adherence is obtained whenever Gunite is applied.

For lining coal bunkers and steel chimneys it possesses great resistance to corrosion and protects steel-work from the abrasive action of coal or coke.

Handbook "GUNITE" sent on request

THE CONCRETE PROOFING CO., LTD.

100, VICTORIA STREET, S.W.1

Telephone : Victoria 7877 & 6275

Gas Journal

106th YEAR OF PUBLICATION

EDITOR : CLIFFORD A. KING

Deputy Editor : Arthur C. Cross

Technical Editor : Norman S. Smith, B.Sc., Assoc.M.Inst.Gas E.

11, BOLT COURT, FLEET ST., Telephone : CENtral 2236-7

LONDON, E.C.4. Telegrams : Gasking, Fleet.

VOL. 277 NO. 4732 February 10, 1954

CONTENTS

Page

EDITORIAL COMMENT

Select Committee Debate ... 339
Local Government Reform ... 339
Training in Engineering ... 340
The 1954 Budget ... 341
Exports in a Buyer's Market ... 341

SPECIAL ARTICLE

Light on a Great Society. By J. Samson, A.C.I.S. ... 345

CORRESPONDENCE

Cooker Boiling Burners. H. J. Toogood ... 342
Town Gas Production. W. A. P. Hoskin ... 342

NEWS OF CURRENT EVENTS

'Highest Discharge Loader'—an apology ... 340
Diary ... 341
Personal ... 342
Obituary ... 342
350 Mile Pipeline to Karachi. Development of Gas Field in Baluchistan ... 343
European Productivity Agency ... 343
Gas Industry and Civil Defence ... 344
American Research ... 344
Size Analysis of Coke ... 344
Midland Juniors Visit Parkinsons ... 361
North Thames Films ... 361
Industrial Expansion at Larne ... 364
Notable Family Records ... 365
'Scols' Golden Jubilee ... 365
Conference on Complete Gasification ... 365
Welfare Services ... 365
Priority for New Houses ... 365
Coke Sales Abroad ... 365
Growth at Dunfermline ... 366
The Atomic Age ... 366
Improving Transport of Appliances ... 366
Balfour Lecocq, Ltd. ... 367
Coleraine Gas Price ... 367
Paint Exhibition ... 367
Flame ... 367
Boiler Fuels Dearer ... 367
How They Waste Gas ... 367
Local Shilling Shortage ... 367

IN PARLIAMENT

Revolutionary Proposal ... 364
Electricity in Scotland ... 364

TECHNICAL RECORD

Manchester Junior Association. Abstracts of Short Papers for the F. Johnston Prize ... 346
Gas to Crawley New Town. By J. E. Steel, Technical Assistant to Distribution Engineer, East Surrey Division, South Eastern Gas Board ... 348
Aspects of Consumer Service. By Wallace A. Green, Distribution Engineer, Paisley, Scottish Gas Board 350
High Pressure Bulk Supply. By R. O. Emmony, Cambridge Division, Eastern Gas Board ... 356

Subscription Rates: Home and Empire 52/-; Foreign 60/.

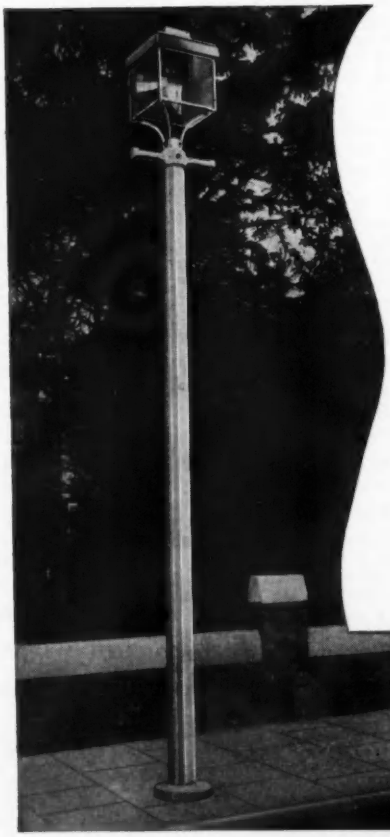
Full Publishers' Notice: See Page 369,

Gas Journal . . . . Walter King Ltd.

The Symbol of Craftsmanship

THOS. GLOVER & CO. LTD.
Gothic Works, Angel Rd.,
EDMONTON, LONDON, N.18
and Branches

TGJ



All 'MAXILLA' lighting equipment at substantially reduced prices!

Throughout the coming lighting season, the prices of the whole range of 'MAXILLA' lamps are being reduced to a level which compels the attention of Lighting Authorities everywhere.

Orders placed NOW will be accepted at the NEW prices.

Write or telephone to:

PARKINSON & COWAN
INDUSTRIAL PRODUCTS
(A DIVISION OF PARKINSON & COWAN LTD.)
DEPT. Q, COTTAGE LANE WORKS
CITY ROAD, LONDON, E.C.1
Tel: Clerkenwell 1766/7

L 12

Gas Journal

VOL. 277. NO. 4732 106TH YEAR February 10, 1954

SELECT COMMITTEE DEBATE

Six months ago a Select Committee of the House of Commons reported on methods by which Parliament might be kept informed of the affairs of the nationalised industries. The report recommended that a standing committee of the House of Commons should be appointed to examine the nationalised industries with the object of informing Parliament about the aims, activities, and problems of the corporations, but not of controlling their work. A further recommendation was that the staff of the standing committee should include an officer of the status of the Comptroller and Auditor General. A long-promised debate on the report took place in the House on Monday on a motion for the adjournment. After some six hours the debate concluded with the problem still open to solution at a later date. It was the first big debate on the best way to keep Parliament informed of the activities of the State boards. Although the Select Committee was unanimous in its recommendations, the reception of the report in the House was far from unanimous. Mr. H. Crookshank, Leader of the House, accepted in principle, but with reservations, the idea of a Select Committee to do the work, but emphasised that the duties of the responsible Ministers must be properly safeguarded. The Government, he said, wanted to keep open the possibility of a joint committee, including members of the House of Lords.

Stating the general view of the Labour Party, Mr. Herbert Morrison raised a number of objections to the Select Committee procedure. He thought the best method of accountability was frank and free discussion in the House with possibly a mixed body of M.Ps. and capable people from outside to conduct *ad hoc* enquiries once every seven years into the various industries. He felt he understood the motives behind the report, but he considered they should not proceed further with this particular approach. Different views, however, came from other members of the Opposition, notably Mr. Ernest Davies, who pointed out that Ministers had the right to issue directives on general matters concerning the national interest, but in preference to using those directives Ministers had had close relations with the chairmen of the boards and influenced them in the policies which they had decided. Mr. R. Assheton, who presided over the Select Committee which reported last year, vigorously opposed the idea that the heads of the nationalised industries would be the type of men who would be looking over their shoulders and worrying about what might be said later about their actions. Men like Lord Hurcomb and Lord Citrine—and he might have included Sir Harold Smith—would not be frightened of subsequent criticism of their actions if they knew they had been taken conscientiously. The debate continued for three-quarters of an hour longer than the Whips on both sides seemed to have intended, and the House was not called upon to record its vote.

LOCAL GOVERNMENT REFORM

The gas industry's connection with local government by no means ended when in 1949 the one-third of the industry which was formerly owned and successfully operated by municipal authorities became part of the nationalised structure. County, borough, and urban district councils are not only still very good gas consumers; they have much to do with planning and other aspects of works and mains development, they have an important voice in the question of whether council house tenants shall or shall not have complete freedom of choice in the matter of fuels, and they appoint a substantial number of representatives to the gas consultative councils. Thus we are still very much interested in local government and we have read with interest a pamphlet on local government reform, issued by the National Committee of the Co-operative Party, which is to be submitted to the Party's annual conference at Blackpool at Easter. The report advocates the abolition of county councils, except in a few sparsely populated areas. It is suggested that wherever practicable the form of local government should be an 'all purpose' authority, either a county borough or an 'area authority' with analogous powers. Some adjustment of the areas covered by existing county boroughs is necessary, says the report, if they are to exercise their powers efficiently, and other county boroughs will need to be created.

Where the county council is not retained it is recommended that its area should be divided among existing or new county boroughs and a new type of area authority whose powers would be analogous to those of the county borough. These new authorities would operate in rural areas where there is no large town to provide a centre of local government administration, but where there may be a series of small townships. A

federation of area authorities, called a joint services committee, would co-ordinate those services which need to be operated over a wider area. Within the area authorities there should be district councils formed by amalgamation of existing county districts or where necessary by creating entirely new units. They would be entrusted with the administration of most of the services at present exercised by the county districts, but subject to the financial oversight of the area authority. Members of the area authority would sit on the district council of the area for which they are elected.

The county council would continue to function in the sparsely populated counties which consist of a large number of small communities. Some of the councils could be amalgamated. It is urged that a local government commission should be created to define all local government boundaries. 'Many of the functions now exercised by regional hospital boards and by the gas and electricity boards could,' says the report, 'be returned to local administration if it were re-organised on the lines advocated. The report also deals with local government finance, advocating an immediate enquiry by a Royal Commission. The rating of site values should be re-considered as a supplementary source of local revenue. Both industrial and agricultural derating should be abolished, if necessary by stages. There should be three types of Government grant: A general grant, percentage and unit grants, and a disparity grant. The payment of out-of-pocket expenses to local government representatives is said to be inadequate and ought to be re-considered. The payment of an honorarium might be made to committee chairmen. The report will, as we have said, be submitted to the Easter conference of the Co-operative Party at Blackpool, and the conference has it in its power to reject the document in whole or in part.

TRAINING IN ENGINEERING

Many leading engineers, as well as university professors, consider that carefully planned practical training and experience prior to entry to the university, during its course, and subsequent to graduation in engineering, has, on average, the greatest number of advantages and the least number of disadvantages. The whole subject was discussed recently in a group of papers presented at a general meeting of the Institution of Mechanical Engineers; and we were particularly interested in the comments of Mr. Kenneth R. Evans, who is Manager of the Education Department of the Metropolitan-Vickers Company. An essential part of the practical engineering training of graduates, he maintained, was the opportunity for intimate contact with the 'men on the floor of the shop,' as well as with all grades of supervisor, technician, and technologist in all the manufacturing departments, design and drawing offices, offices concerned with selling, and, indeed, the industrial research departments. The extent to which this is now necessary *in time* is possibly less because of the experiences of all types of mentality and outlook obtained in large measure during the period of compulsory military service. Concerning the best use of the generally accepted five-year period of combined theoretical and practical training beyond intermediate B.Sc. standard, thought must be given to the effects of military service and at what age and stage of experience of life and knowledge this should be undertaken.

The industrial earnings that a young man loses when he commences military service immediately on attaining the age of 18 are less than those he forfeits during the period of military service after the completion of his full training at a university. It is the view of Mr. Evans, however, that this is the only disadvantage of postponing military service. An important advantage of deferment is that the trained engineer can not only extend his engineering experience in the Forces, but be of more use to his country. This, of course, is a wide generalisation. But, if he has reasonable qualities as a man, he should have high hopes of a commission. And this, in turn, will enable him to gain useful experience in administration, leadership, and responsibility. It is true that all the Services welcome the recruitment of National Service men after training rather than before training. Further, among the advantages is the security of being fitted for an immediate adequate and settled post on the completion of military service.

At present, the majority of young men who leave school with the intention of following a university course proceed direct. But certain universities require candidates for the engineering faculties to have completed military service with the intention that they shall go up to the university more mature and experienced in life than if they went direct from school. Incidentally, the universities readily make exceptions for those who have had one year of experience in an organised apprenticeship course, because both the social relationships and the preliminary experience in engineering practice are conducive to better understanding of the theoretical work of the university course. While comparatively few young men have so far pursued such a course of pre-university training, one firm has had more than 450 young men accept this method of combined practical and theoretical training during the past 22 years.

Mr. Evans mentions that the opinions of the young men who have followed the sequence of one-three-one years of workshop and university work have been, without exception, that they were glad that they had adopted this arrangement of training rather than direct entry to the university. On the other hand, many of those who went direct to the universities and entered industry for a two-year post-graduate apprenticeship course have expressed the view that if they could have their choice again they would have pre-university apprenticeship training for one year. The broad issue is, of course, being discussed in terms of peacetime conditions. But the expressions of opinion ventilated at the meeting of the Institution of Mechanical Engineers to which we have referred have purport and significance.

'Highest Discharge Loader'

Under this heading, on p. 294 of last week's issue, we published Trade News regarding the Merton 'High Discharge' overloader, for which the concessionaries, Mackay Industrial Equipment, Ltd., claim a discharge height of 12 ft. 6 in. The CHASESIDE ENGINEERING COMPANY remind us that the discharge height of their well-known Super Hi-Lift Shovel is 13 ft. 7½ in. Messrs. E. BOYDELL & CO., LTD., point out that they have in production, and available for sale, a Muir-Hill Loader—the SS. 'Supalift'—with a discharge height of 14 ft. 6 in. We apologise to these firms for the '*est*' which crept into our title, and look forward to referring in greater detail, in an early issue, to their apparatus.

THE 1954 BUDGET

Budget Day is approaching and as usual the Federation of British Industries has made representations to the Chancellor of the Exchequer in the hope of securing a further lightening of the burden of taxation which has weighed so heavily on industry for so long. The Federation thinks that the procedure adopted in 1953 was the best method to achieve the maximum incentive in return for the sacrifice of revenue, namely to give a substantial aggregate relief, fairly balanced between direct taxes and indirect taxes. A stimulus to further saving and a hope of greater reward for successful enterprise are still needed, and the Budget can and should be used again as the instrument of such a policy. The first priorities of the forthcoming Budget should, in the Federation's view, be a reduction in the standard rate of income tax and a further substantial reduction in the general rates of purchase tax. The memorandum also contains recommendations regarding death duties, profits tax, depreciation of fixed assets and valuation of stocks, depreciation anomalies, overseas income and profits, and control of companies.

The second part of the memorandum deals with points of detail for discussion with the Chancellor's advisers, and includes a reference to effluent treatment plants. It is pointed out that a depreciation allowance is given on so much of the installation as ranks as plant, but by far the greatest element in the cost lies in the installation of pits, settling tanks, and underground piping, in relation to which the basis of depreciation is severely inadequate. The memorandum urges that the depreciation position of effluent treatment plant should be examined with a view to agreeing a realistic allowance on the full cost of an installation. Reference is also made to the anomaly in the profits tax position where a company wishes to distribute the compensation received on nationalisation of its business or part of its business. Arguments for amendment of the law have been set out in previous years and need no repetition, but the Federation asks again that the position should be examined and action taken to remove the injustice inherent in the present law. The Income Tax Payers' Society has also submitted a Budget memorandum urging a reduction in the standard rate of income tax; increase in earned income relief with removal of the present limit of £450; payment of post-war credits in cases where the owner has reached the prescribed age but has died without making a claim; and a review of the housekeeper allowance in cases of hardship where a single person has to employ a housekeeper because of ill health, old age, or other specific cause.

EXPORTS IN A BUYER'S MARKET

The Federation of British Industries has now published a full report of its export sales conference held at Buxton from October 30 to November 1. British exporters today, it is stated in the introduction, are faced with foreign competition to an extent unknown for the past 14 years, and the situation raises questions wholly different from those of even a few years ago, when the seller's market was the general rule. The object of the conference was to discuss the ways in which industry can help itself to increase exports in present conditions. The conference was attended by 120 members of the Federation and by 15 visitors representing banks, merchant houses, and various national organisations concerned with export or salesmanship. All the members invited were experienced exporters in the consumer goods field, with the exception of the heavy engineering and contracting industries, whose selling problems are different from those of the rest of industry. The main points covered in various discussion groups were export opportunities, organising for export, relations between exporters, the export sales force, and export promotion.

To those who attended it the value of the conference lay largely in the exchange of views between people of widely differing experience on details of exporting practice. Although the conference was deliberately concerned with specific practical issues, its discussions incidentally threw light on some questions of major policy. It was felt that any attempt to distinguish between the export prospects of large and small firms was both fruitless and misleading. Where a firm fails in an overseas market and so damages both its own and the national reputation, its failure is the result of inefficiency or lack of keenness and bears no relation to its size. Follow-up action is being considered by the Federation and other bodies on the numerous practical points raised at the conference.

Diary

Feb. 11.—NORTH WALES JUNIORS: Visit to John Summers coke oven plant.

Feb. 12.—SCOTTISH JUNIORS (WESTERN): 'Water Gas,' W. F. Cummings, Tradeston.

Feb. 12.—LONDON JUNIORS: 'A District Manager's Impressions in a County Division,' E. J. Hoadley, South Eastern Gas Board, 178, Edgware Road. 6.30 p.m.

Feb. 12.—INSTITUTE OF FUEL: 'Aspects of a National Fuel Policy,' G. Nabarro, M.P. The University, Leeds. 6.30 p.m.

Feb. 16.—LONDON AND SOUTHERN SECTION, I.G.E.: 'The Preparation of Coal for the Gas Industry,' E. M. Myers, National Coal Board.

Feb. 17.—INSTITUTE OF FUEL: Joint Meeting with the Institute of Petroleum. 'Underground Gasification," C. A. Masterman. Grosvenor Hotel, Chester. 7.30 p.m.

Feb. 18.—EASTERN SECTION, I.G.E.: 'Rehabilitation of the Mablethorpe Distribution System after the Floods,' J. W. Wilson, East Midlands Gas Board; 'The Construction of a Prestressed Concrete Gasholder Tank at Cromer.' E. Williams, Eastern Gas Board. 17, Grosvenor Crescent, London, S.W.1.

Feb. 19.—MIDLAND SECTION, I.G.E.: Discussion on 'Anglo-American Productivity Team Report,' introduced by A. G. Higgins, Assistant Secretary, I.G.E., and J. A. Hepworth, Deputy Chief Engineer, North Thames Gas Board. Queen's Hotel, Birmingham, 2.15 p.m.

Feb. 20. — MANCHESTER JUNIORS: Annual Dinner, Lyme Hall, Disley, Cheshire.

Feb. 23.—INSTITUTE OF FUEL: 'Carbonisation of Blends of Coals to Produce Metallurgical Coke,' by H. Burdgett. Institution of Mechanical Engineers, Storey's Gate, London, S.W.1. 5.30 p.m.

Feb. 25.—NORTH THAMES G.C.C.: Westminster City Hall, Charing Cross Road, London, W.C.2.

Feb. 27.—MIDLAND JUNIORS: Annual Dinner at Dudley.

Feb. 27.—YORKSHIRE JUNIORS: Short Paper Day: 'Works,' R. Mason (Huddersfield); 'Industrial,' N. Walker (Elland); 'Distribution,' E. Birkett (York). At Doncaster.

March 2.—MIDLAND JUNIORS: 'Underground Gasification,' G. Hart.

March 2. — SOUTH EASTERN G.C.C.: Caxton Hall, Westminster, 11 a.m.

March 2.—EAST MIDLANDS G.C.C.: Victoria Station Hotel, Nottingham. 11.30 a.m.

March 2-27.—IDEAL HOME EXHIBITION. Olympia. Gas Council Exhibit.

March 3. — SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton, 11 a.m.

March 3.—SOUTHERN G.C.C.: Social Welfare Club Room, Gasworks, Reading.

March 6.—SCOTTISH JUNIORS: Joint Meeting of Eastern and Western Districts at Glasgow. Paper by W. K. Hutchison, Chairman, South Eastern Gas Board.

Personal Notes

MR. IAN C. MCKELLAR, Scottish Sales Representative of George Orme & Co., Ltd., has removed to 'Morro Velho,' 7, Bulloch Avenue, Giffnock, Renfrewshire (T/N Giffnock 152).

MR. G. LLOYD JONES has been appointed Manager of the Cardiff district office of the British Thomson-Houston Co., Ltd., with effect from February 15, to succeed MR. A. F. MACCARTHY, M.I.E.E., who is retiring. Mr. Lloyd Jones joined the B.T.H. (Rugby) for a special course of training leading to a staff appointment as a commercial engineer in 1922. In 1926 he was transferred to the Middlesbrough district office, being appointed manager in 1936. Mr. MacCarthy served in the Royal Engineers during the whole of the first world war, after which, in 1919, he joined the staff of B.T.H. Manchester office. At the end of the second world war, after having been seconded to A. V. Roe & Co., Ltd., he rejoined the B.T.H. Company and in 1945 was appointed manager at Cardiff. MR. T. W. J. TEMPLE has been appointed Manager of the Middlesbrough office, to succeed Mr. Lloyd Jones. Mr. Temple went to Rugby in 1933 as an ex-university apprentice. On completion of the course in 1936 he took up a staff appointment as a commercial engineer at Rugby and in 1938 was posted to the Sheffield district office, moving to Newcastle in 1947.

MR. J. OWEN, of York, who was Secretary of the National Union of Blastfurnacemen, and is a member of the Iron and Steel Board, has been appointed by the Minister of Fuel and Power to be a part-time member of the North Eastern Gas Board. The appointment will date from May 1.

MR. J. BISHOP, M.I.CHEM.E., General Manager of Robert Dempster & Sons, Ltd., Elland, has been appointed General Manager of Nordac, Ltd., chemical engineers, Uxbridge, and takes up his duties on March 1. Mr. Bishop joined Robert Dempster & Sons in 1949 from Newton Chambers & Co., Ltd.

MR. A. G. VERNON has been appointed as assistant to Mr. R. B. Reynolds, the Northern Sales Manager for George Wilson Gas Meters, Ltd. and Radiant Heating, Ltd. Mr. Vernon will act as the Junior Sales Representative for Radiant Heating, Ltd., in the Northern area. He has just completed a period of training in the London factory of that Company.

MR. LEON BAILLY, M.INST.F., for many years a Director of the International Furnace Equipment Co., Ltd., of Aldridge, resigned from that position at the end of 1953 owing to increasing commitments on the Continent. He will in future operate mainly in France and Belgium in conjunction with Le Gaz Intégral, of Paris, with whom the International Furnace Equipment Co., Ltd., is closely associated.

MR. E. M. POOL, M.S.M.A., ASSOC.INST. GAS E., has been appointed Acting Sales Manager of the decorative, industrial, and gas divisions of the sales organisations of Donald Macpherson & Co., Ltd. Mr. Pool joined the Company 30 years ago, and for many years represented Macphersons in the industrial field in the North and Midlands. In 1949 he was appointed Sales Manager, Gas Division, covering Great Britain.

MR. R. W. PARKER, Finance Director of the Scottish Division, has been appointed by the National Coal Board to be Deputy Chairman of the North Western Division. He succeeds MR. W. H. SALES who, last September, was appointed by the Minister of Fuel and Power to be Labour Relations Member of the National Coal Board. When the coal industry was nationalised in 1947, Mr. Parker was appointed Finance Director of the Scottish Division. From December, 1949, to July, 1950, he was interim Deputy Chairman of the newly-formed Northern (N. & C.) Division during its organisational period. In 1951 he was Chairman of an O.E.E.C. Mission to the United States, in connection with cost accounting and productivity.

Correspondence

COOKER BOILING BURNERS

DEAR SIR,—Simplicity is not everything. I would like to speak from a user's point of view, as I feel (apart altogether from laboratory statistics) that in the hands of very busy housewives, wholly absorbed in the cooking of meals, there is worthwhile scope for increasing both the efficiency and the convenience factors of gas.

The flame fully-on for rapidly bringing to the boil is 1¼ in. high, and its tip just touches the saucepan. After the water has reached boiling point, the flame is lowered just to maintain boiling, and, according to circumstance, the lowered flame is anything between ½ in. and ⅝ in. high, so that the tip of the lowered flame may be from 1½ to ¼ in. below the saucepan.

It is obvious that the one burner is much more efficient in the use of gas for heating water than is the other. Yet their respective efficiencies could be maintained at a higher level if the distance between the burner-head and the saucepan were automatically adjustable, always proportionate to the height of the flame. Therefore I suggest for consideration that the burner-head be geared to the gas-tap, so as to be raised and lowered as the gas-tap is adjusted, so that the tip of the flame would always be in the near vicinity of the saucepan.

Another example is the simmering burner, which, though operating virtually all its life with a small flame, whose tip may be 1½ in. from the saucepan, may send more heat into the kitchen than it does into the saucepan.

Yours faithfully,
H. J. TOOGOOD.

43, Uxbridge Road,
Hampton-on-Thames.
February 8, 1954.

TOWN GAS PRODUCTION

DEAR SIR,—I have read with interest the paper by Messrs. Cottrell and Austen which you published in your issue of January 27. It gives a concise review of present-day methods of town gas production. There are, however, two or three points on which I would like to comment.

First, the authors state that considerable developments have been made in coke oven design and construction in the past 25 years. I think this statement is misleading. The coke oven of today is of substantially the same design as it was nearly 30 years ago—minor refinements such as regenerator fillings, yes, but no major re-design. Instances of this are the Koppers coke ovens built at Beckton in 1926 and the Becker ovens built at Nunnery and Thorncliffe in 1928. The modern silica coke oven has been ready to serve; and, indeed, it has served the gas industry throughout this period.

Secondly, the authors suggest that coke oven batteries should be of 60-70 ovens and as such are not suitable for gas-making plant. In fact, the coke oven is the most efficient plant for bulk production of gas. If gas is to continue as a serious competitor with other forms of fuel and power, then large central coke oven plants must be built and gas distributed by grids operating at high pressure.

Finally, most coke oven managers would be delighted to receive coal of the quality demanded by the gas industry.

Yours faithfully,
W. A. P. HOSKIN,
President,
Coke Oven Managers' Association.
Worsborough Bridge, Yorks.
February 3, 1954.

Obituary

MR. M. W. RONAYNE, Manager of the zinc and ironwork departments of G. A. Harvey & Co. (London), Ltd., died suddenly while playing badminton on January 22. Mr. Ronayne joined the staff in 1920, and will be remembered for his interest in the education of young apprentices. The funeral was attended by Mr. H. T. Eatwell, Vice-Chairman and Managing Director, Mr. H. E. Cooper and Mr. P. T. Bliss, Directors.

MR. ROBERT GRANT, who retired in 1932 after more than 30 years with the Primitiva Gas Company of Buenos Aires, died at his home at Southgate on February 4, aged 78. Having joined the Company about 1900, he was Accountant from the time of the amalgamation of the old River Plate Gas Company and the Primitiva Gas and Electricity Company in 1910 until his appointment as Secretary in 1924. Primitiva Holdings, Ltd., was formed in 1929, and Mr. Grant was also Secretary of that Company until the date of his retirement in 1932. For very many years he took an active and helpful part in the civic life of the community in which he lived. A member of the old Southgate Urban District Council, he offered himself for election after incorporation to the Southgate Borough Council, and his public services were recognised by his elevation to the aldermanic bench. He was also a member and later an Alderman of the Middlesex County Council, and was a Justice of the Peace until advancing years compelled his retirement. He was an ardent Presbyterian, and was a Past Master of the Evening Star Lodge.

350 Mile Pipe Line to Karachi

Development of Gas Field in Baluchistan

Through the courtesy of the Editor of *The Times* we are able to reproduce the following article from *The Times* Karachi Correspondent which appeared in the issue of Friday last. The article has especial interest and significance in view of the advertisement which we published on p. 301 of last week's 'GAS JOURNAL.'

Gas which has been discovered at Sui, an almost uninhabited place in Baluchistan, will be available for industrial consumption in Karachi and Sukkur (Sind) about the middle of next year.

The discovery of gas at Sui, which is about 300 miles from Karachi, was announced in 1952 by Pakistan Petroleum, Ltd., a subsidiary of the Burmah Oil Co., while it was searching for oil. A second well was drilled five miles from the first well last year, and a third is being drilled now with a view to extension of the gas field.

A revolution in Pakistan's fuel position will be brought about by the development of the Sui field. According to Mr. C. Stribling Snodgrass, who compiled a report on Sui gas, 'the discovery is of great national importance and

significance as a ready source of fuel for the agricultural and industrial development of West Pakistan. A pipeline is all that is needed to bring this abundant supply of natural gas to the points of consumption.'

£9 Mill. Initial Cost

According to his recommendations, which have been accepted by the Pakistan Government, gas will be piped to Karachi through a 16-in. pipeline about 350 miles long. The initial capital cost is estimated at £9 mill. The pipeline, for which an order is expected to be placed soon, will descend about 750 ft. from the Sui range to the desert plain, and pass through irrigated and cultivated land to Sukkur, where it will cross from the west to the east of the River Indus. It will then skirt the Khairpur desert and cross the cotton and wheat lands of Nawabshah and Hyderabad districts in Sind. It will re-cross the Indus at Kotri, and traverse desert-like country to reach Karachi. This fuel, supplied direct to the consuming point, will be the cheapest ever known in the East.

The annual coal requirements of Pakistan are about 2 mill. tons, against the local output of about 600,000 tons a year. The proved gas reserve at Sui is stated to be capable of supplying 100 mill. cu.ft. of gas a day for about 60 years. This would be equivalent in heating value to about 1,600,000 tons of coal per annum, and more than sufficient to replace imports of coal.

Power Stations' Needs

It is conservatively estimated that the initial foreign exchange saving of about £3 mill. would steadily rise to nearly £9 mill. a year. Mr. Snodgrass estimates that during the first stage of the project minimum fuel requirements on the route served would be about 37 mill. cu.ft. of gas a day covering the needs of three power stations at Hyderabad, Kotri, and Karachi, and of three cement plants at Rohri, Hyderabad, and Karachi, all of which have been built or are planned for completion by the middle of next year.

The Government is also considering the establishment in the area which will be served by the proposed pipeline of a nitrogenous fertiliser plant using natural gas as raw material.

EUROPEAN PRODUCTIVITY AGENCY

THE first year's programme of work of the European Productivity Agency, set up by decision of the Council of the Organisation for European Economic Co-operation in May, 1953, has been published. The programme is divided into six main headings: specific economic and legal problems; technical and administrative problems of industry and commerce; human factors of management and labour; applied research and technology; food and agriculture; and information and general services.

In putting forward the E.P.A. programme, the Organisation points out that 'productivity' means getting the best results out of the numerous factors of production. These include capital, raw materials, plant and machinery, land and labour. The aim of the productivity campaign is to increase production by the better arrangement of work, by the improvement of physical conditions, by the use of better equipment, by more efficient management techniques, and in general, by the avoidance of all forms of waste, whether of time, money, materials, space, or human effort. The Agency's programme of work emphasises the fact that the final purpose of the productivity campaign is a higher standard of living in Europe; this can only be achieved by a higher flow of goods and services, with a corresponding higher real purchasing power in the hands of the consumer.

Both technical and psychological problems arise in this campaign. It is necessary to discover and make known the means by which productivity can be increased, but it is perhaps more difficult, and more important, to persuade those concerned to adopt these means.

Working within the general framework of O.E.E.C., and in conjunction with he Organisation's technical committees and other bodies, the E.P.A. will assist national productivity centres in the 18 member countries in their campaigns for industry, commerce and agriculture. These centres and the E.P.A. between them dispose of an amount equivalent to approximately 117 mill. dollars, made available under the 'Moody Amendment' of the American Economic Co-operation Act and from other sources. Though these resources will last only a few years, it is hoped that by the time they are exhausted the Agency will have gained a sufficient measure of confidence from European management and labour, as well as from the national centres, to ensure governmental support for its continued existence.

The Agency will carry out its programme by collating existing knowledge, and acquiring fresh knowledge; by disseminating or exchanging this knowledge; and by stimulating the necessary action to put it into effect. This will involve among many other activities the organisation of working parties and missions, the publication of reports and digests, the organisation of training courses, the use of audio-visual aids, and the exchange of workers, specialists, and trainers. Stimulation to action will include O.E.E.C. recommendations to governments, consultations with national and international groups, and the sponsorship of private associations working towards the common goal of productivity.

The increasing strain of industrial life, the complications of shift working, and the calls, trials, and distractions of modern life are the reasons given in the annual report of the Court of the University of Sheffield for a falling off in the number of workers who are seeking to improve their education and knowledge of affairs.

Gas Industry and Civil Defence

With a view to empowering the Minister of Fuel and Power to make grants to gas boards towards approved expenses incurred in securing the due functioning of their undertakings in the event of hostile attacks, a draft of the 'Civil Defence (Gas Undertakers) Regulations, 1954,' will be laid before Parliament on Thursday.

The dratt provides that the Minister may serve notice on any gas board requiring it within the time specified in the notice to make a report stating what measures it has taken or proposes to take to secure the due functioning of its undertaking in the event of attack, or to take such measures as may be specified to secure the due functioning of the undertaking in such circumstances.

Failure to comply with requirements will render a board liable on summary conviction to a fine not exceeding £100, and £10 per day for each day on which the failure continues, provided that the court may fix a reasonable period from the date of conviction for compliance with the requirements of the notice.

The Ministerial grant towards approved expenses is to be limited to 52½% of such expenses.

The rescue vehicle has been equipped to the standard requirements of the Home Office, and is already being used for instruction. All equipment is placed ready to hand for immediate action by the rescue team.

The East Surrey Division's rescue team carrying out a rescue by the ladder derrick method from the roof of No. 2 Booster House, Waddon Works, Croydon. The rescue is successfully completed.

South Eastern Training

Civil Defence is a problem that is being tackled with vigour by the industry and the pictures here reproduced show how the South Eastern Gas Board is setting about the job. They show a rescue vehicle that has been equipped to the standard requirements of the Home Office, and is already being used for instruction. A second vehicle has been commissioned. As can be seen, all the equipment is placed ready to hand for immediate action by the rescue team, the position of each item being standardised by the Home Office specification.

In the other photograph a rescue team, in training at Waddon Works, Croydon, is removing a casualty from a roof by means of a stretcher and ropes.

Civil Defence training is organised by a senior rescue instructor, trained at the Home Office School at Falfield. He, in turn, has trained a number of local instructors, who will be responsible for passing on the instruction throughout the Board's area.

It is believed that the South Eastern is the first gas board to be equipped with this latest type of rescue vehicle, and to commence heavy rescue training exercises.

AMERICAN RESEARCH

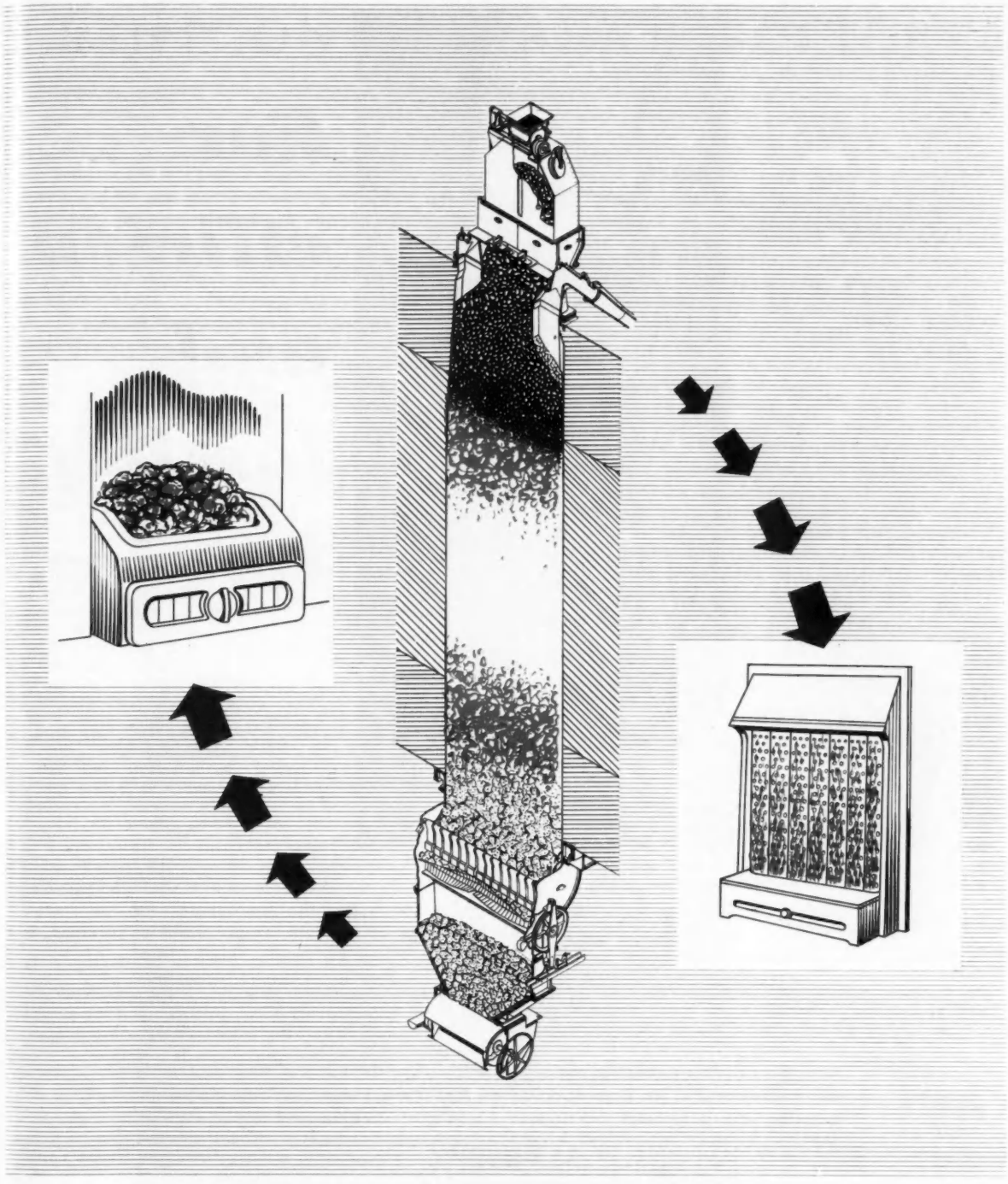
SOME of the principal features of scientific effort in the United States are noted in *Science in U.S.A., 1953*, just published at 2s. (by post 2s. 1½d.) by H.M. Stationery Office for the Department of Scientific and Industrial Research. The report has been written by the British Commonwealth Scientific Office in Washington. Federal expenditure on research during 1951-52 was 1,800 mill. dollars. During 1952-53 it was expected to be 2,200 mill. Most of this money is not spent in Government-owned laboratories; 15% pays for work at non-profit institutions, 60% for work at profit making organisations and only the remaining 25% for research in Government stations. The expected trend is for expenditure to increase during 1954 and then to remain constant or even decline. This will not mean that the effort put into research has been reduced, for the increase in expenditure at the moment is mainly to pay for building and equipping large laboratories and plants.

Industrial research in the U.S.A. is dominated by fewer than 20 companies. They each employ a professional research staff of a thousand or more. Three industries—aircraft, electrical machinery, and chemicals—employ 50,000 professional research staff out of a total of 94,000 covered by a Government survey. At the other end of the scale is the textile and garment industry. This employs only 734 research engineers and scientists and more than one-third of those are on the staff of only four companies. The disparity between the research effort of the modern industries and the 'traditional' ones appears to be as great in the U.S.A. as it is in Great Britain.

The previous report drew attention to the controversy over the costs of producing oil from shale, and oil from coal by the hydrogenation of Fischer-Tropsch processes. The National Petroleum Council's final report maintains the view that neither the hydrogenation nor the Fischer-Tropsch process approaches a cost competitive with gasoline from crude petroleum at 12 cents per U.S. gal. Oil shale is the only alternative source that could begin to be considered commercially. The Pittsburgh Consolidation Coal Company has announced the completion of its development work on the hydraulic transportation of fine coal. The later development research was conducted with a 12-in. bore pipe-line over a mile long. The project, which was carried out at Cadiz, Ohio, cost more than $550,000. The company has expressed itself satisfied that the adoption of this method of transportation over distances from 50 to 200 miles is an economic proposition. Negotiations are in progress for a long-term contract with a large electric utility to supply coal in this way over a distance of 100 miles.

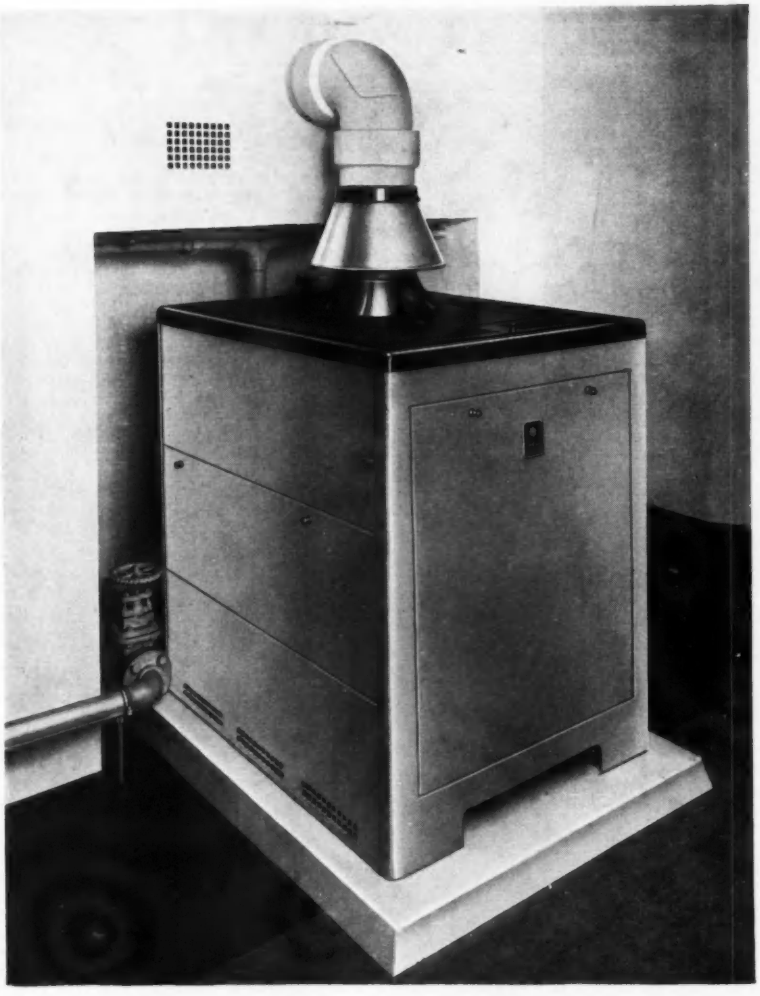
SIZE ANALYSIS OF COKE

The British Standards Institution has recently published B.S. 2074:1954 'Size Analysis of Coke.' The standard is applicable to all types of coke, including blast furnace coke, foundry coke and graded gas and oven coke for domestic and industrial purposes. It describes the size of sample to be taken, the method of collecting the sample and the method of analysing the sample. An important feature of the specification is the introduction of a method of checking the accuracy of sampling, based on sub-division of the sample and the separate analysis of the sub-samples so obtained. Copies of this standard may be had from the Sales Branch, British Standards Institution, 2, Park Street, London, W.1. Price 6s.



FOR FIRES WITHOUT SMOKE
USE GAS OR USE COKE...
MADE IN W-D CONTINUOUS VERTICAL RETORTS

WOODALL-DUCKHAM CONSTRUCTION COMPANY LTD.
Woodall-Duckham House, 63-77 Brompton Road, London, S.W.3.
'Grams: Retortical (Southkens) London. 'Phone: KENsington 6355 (10 lines)



For efficient and lasting service..

The illustration shows a No. 2-GBB-6 Series Ideal Gas Boiler installed in modern business premises in London.

Efficient, labour-saving, clean and trouble-free, the Ideal Gas Boiler is fully automatic—an economical investment. In new buildings, or in buildings being modernised ; where space is limited for fuel storage, and labour not available for stoking ; Ideal Gas Boilers are essential, providing a constant temperature in heating and hot water supply. Smokeless too, they meet the urgent need for heating equipment which will not pollute the atmosphere. In a range of 22 sizes, from 20,000 to 1,430,000 B.T.U.'s per hour, Ideal Gas Boilers are completely thermostatically controlled and have insulated jackets of steel or aluminium in appropriate finishes.

They are the result of long experience and much research in this specialised type of heating and their growing popularity is a measure of their success.

IDEAL GAS BOILERS

Reliable and Labour Saving

IDEAL BOILERS & RADIATORS LTD · IDEAL WORKS · HULL

IDEAL-Standard

LIGHT ON A GREAT SOCIETY

by J. SAMSON, A.C.I.S.

The history of many industries may be regarded as r mantic, and one would no doubt include gas, with the g eat benefits which it brings to man for the conduct of i dustry and for domestic purposes, in this category. It i , however, the story of the early days of the pioneers v ho lay the foundations of industry which makes the r ost interesting reading, and if the clock is turned back 2 0 years we arrive, on March 22, 1754, at the founda- t on of the Society of Arts—or, to give it its complete t le, 'The Royal Society for the Encouragement of Arts, Manufacturers, and Commerce.' Knowing this, we see how industry and commerce come to receive their measure of encouragement from a society which appears at first sight to be concerned only with the arts.

The First Century

The Society's *modus operandi* for the first 100 years of its existence was to offer prizes and medals for inventions, improvements, reforms and new formulæ, for talent and for skill in every branch of art and science as applied to manufactures and trade; and some idea of its vigorous activities can be judged from the fact that it spent over £100,000 during the first century of its life in carrying out these objects. It is, therefore, not surprising that some of the results achieved had the most far-reaching effects, that foundations of new industries were laid and that famous men first received practical encouragement for their efforts from a society which was not partisan in any way and whose sole concern was, and still is, the welfare of the nation.

In a short review of the Society's history and work such as this must be, one can only mention in passing such important achievements as the planting of some 50 mill. trees, the abolition of the inhuman practice of sending young boys up chimneys to clean them, the expedition of Captain Bligh and his eventful trip in the 'Bounty,' the establishment of the system of public lavatories, the conduct of commercial examinations, and, of course, the origination of the Great Exhibition of 1851—for all of which, and much besides, the Society of Arts was responsible.

Gas Lighting in 1815

It is perhaps appropriate to start an account of the Society's connection with gas with its own fine building in the Adelphi, which was built for it by the Brothers Adam in 1774 and which it has occupied ever since. For a good many years the rooms were lit by candles or oil, and it is recorded that on one occasion in 1796 when the lighting of the lecture hall, or Great Room as it was then called, was found to be particularly trying, George, the lamplighter, attributed the cause to 'the villainy of his servant who defrauded him of the oil.' George was paid the handsome sum of 4½d. a night for his services.

The Society first used gas for illumination in 1815, when an entrance lamp was installed, but it was not until 1847 that this method of lighting was introduced inside the building owing to the noxious fumes and danger from the crudely purified gas of those early days. The Society used gas for lighting until 1882 when it changed to electricity, the installation of which in its building was one of the first in London. Visitors to the Society's House today may notice in the entrance hall a pleasantly designed wrought-iron lighting fitting which was first used for oil, then converted to take gas, and later electricity. No doubt there will be little difficulty in making any conversion necessary for atomic lighting when that comes about! This, however, is a small but characteristic example of the way in which the Society keeps abreast of the times, and shows that it can readily adapt itself to modern conditions in spite of its age and its illustrious past, on which many another organisation would be content to rest.

With the introduction of gas for illuminating purposes by Murdoch in 1792, the Society offered a number of prizes for improvements in gas lighting, but nothing very important seems to have come about as a result. A silver medal, however, was awarded in 1810 to B. Cook, of Birmingham, who described a process for the distillation and utilisation of gas tar, which must have been one of the earliest suggestions put forward for the manufacture of gas by-products. This tar, stated Cook, was superior to the 'common tar' for ships' timbers, and when it was distilled a light oil was obtained, leaving a residue of pitch 'equal to the best asphaltum.' Although Cook's process was anticipated by Winsor in 1804, it can nevertheless stand on its own merits, and achieved a considerable amount of practical success.

Perhaps the most important invention in connection with the industry, which was recognised by the Society of Arts, was the gasholder submitted by Samuel Clegg, for which he was awarded a silver medal in 1808. The citation reads: 'for his apparatus for making carbonated hydrogen gas from pit coal, and lighting factories therewith.' In principle, the holder in use today has remained almost unaltered from when it was first invented. Clegg, who was apprenticed to Boulton and Watt, and was in Manchester as a builder of steam engines, also invented the gas meter in 1815, and no doubt would have submitted this to the Society also, but for the fact that it would not have been considered on account of its having been patented. This was the Society's policy until 1845. Clegg's meter, however, was improved on by John Malam, who was awarded a gold medal in 1819.

The Telescopic Lamp

It is also of interest to mention the telescopic gas lamp, or chandelier, which was in common use up to recent times. It was invented by William Caslon, of the well-known family of type-founders, who was awarded a silver medal in 1817 for his idea. The drawing in the Society's transactions shows that it was very much in advance of its time, being complete with sliding tubes, waterslide and counter balance weights.

In the middle of the 19th century the Society largely discontinued the practice of offering prizes and medals, and instituted its present system of lectures and their publication in a weekly Journal. By this means the knowledge and experience of the leading authorities in every branch of arts, manufactures and commerce was broadcast not only in this country but all over the world. A number of papers on the gas industry are included in the older volumes of the Journal, and the name of Professor Vivian B. Lewes occurs frequently in this connection at the end and turn of the last century. The incandescent gas mantle had given gas a new lease of life when it seemed certain that electricity was about to supersede it as an illuminant, and it thus held the lead until the new form of lighting became established on an economic and competitive basis.

Young Artists Encouraged

The Society maintains an interest in any industry which serves the public, and efforts are made from time to time to focus attention on some particular aspect of it. For example, young artists are encouraged in their work of designing for industry, and in 1929 prizes were offered by the British Commercial Gas Association and the South Metropolitan Gas Company for designs for domestic gas equipment in the Society's annual Competition of Industrial Designs. 'Co-ordination of Gas Supply' was the subject of a paper read before the Society by Colonel W. M. Carr in 1937, and as recently as 1947 Mrs. G. E.

Abbott gave a talk on 'Gas in the Home' as a natural sequel to Dame Caroline Haslett's 'Electricity in the Home.'

The future, as much as the present, is of equal concern to the Society, and this characteristic of its outlook was admirably expressed by the Duke of Edinburgh, its President, when in opening the 200th Session last November he referred to it as 'forward-looking.' To give practical proof of this description he announced at the same time a competition which the Society is organising in its bicentenary year, calling for forecasts of some single aspect of life in the year 2000. Prizes totalling £500 are being offered for the most original entries, and readers of the 'JOURNAL' who happen to survive until that time will no doubt be interested to compare the prophesies put forward this year with the conditions obtaining then. Whether gas will still be needed to serve man is a question no one can answer, but providing there is a mankind left to serve it is certain that the Royal Society of Arts will still be functioning for the good of the community.

MANCHESTER JUNIOR ASSOCIATION

Abstracts of Short Papers for the F. Johnston Prize

(Continued from p. 292, February 3.)

TAR FIRING OF LANCASHIRE BOILERS

By G. PRATT, Greenbank Works, Blackburn, North Western Gas Board.

The use of tar or tar product fuels for firing boilers has certain practical advantages over other more accepted methods. These may be listed as follows:—

(i) Speed at which temperatures and steam may be raised.
(ii) Steam output of the boiler is considerably increased.
(iii) Low labour and handling costs.

It was the first point which was our primary consideration when the decision was made to convert one of our Lancashire boilers to breeze-tar firing. This form of liquid fuel firing is an auxiliary to the normal practice of burning breeze. The advantage of the type of burner equipment to be described in this paper over other types in common use, is its simplicity of design, which allows a simple inexpensive conversion without alteration to the original furnace.

The retort house at the Greenbank gasworks is served by two Spencer-Bonecourt waste heat boilers, each having an evaporative capacity of 10,000 lb. per hour. The output of these boilers is sufficient to cope with all the steam required on the works in normal circumstances.

Auxiliary steam-raising plant consists of five Lancashire boilers but as a result of recent improvements in waste heat recovery two of these boilers are now out of use. Of the other three boilers, two are usually under fire—one to meet any peak steam demands which may occur, the other to be available in case of emergency. This second boiler is isolated at the stop valve and is maintained at a pressure of 40-50 lb. per sq. in. only. It will, therefore, be appreciated that if a breakdown were to occur on either of the waste heat boilers steam raising potential would decrease by 50%. Under present conditions, however, it would take upwards of 3 hours to raise the Lancashire boilers to an equivalent potential.

Consideration of these facts led to the investigation of a quick and easy method of raising steam potential in an emergency. This led to the idea of liquid fuel firing of one boiler by a means which would be as inexpensive as possible, and preferably using a fuel which was readily available. This gave us the choice of coal tar, water gas tar, and creosote-pitch mixture. The first two were produced on the works; the creosote-pitch mixture had to be purchased.

Factors Affecting Choice of Fuels

The two main factors affecting choice of fuels are price and relative thermal values. The prices of coal tar and water gas tar are approximately 140s. per ton, while the price of creosote/pitch is in the region of 160s. per ton. An investigation into relative thermal values gave results tabulated below:—

Type of fuel	Cost per ton (shillings)	Calorific values Gross	Calorific values Less Sulphur	Sulphur %
Creosote/pitch ..	160	16,534	16,270	0.86
Water gas tar ..	140	16,156	15,899	0.87
Coal gas tar ..	140	16,394	16,156	0.81

It will be seen, therefore, that the difference in the thermal value is negligible. The remaining consideration of cost was balanced in favour of the two tar fuels. It was finally decided, in view of the close proximity of an ample supply, to use water gas tar. It should be stressed that the idea is for emergency rather than for continuous use. For continuous use, much closer examination of the possible fuels would be necessary, particularly in regard to ash content. A high ash content in a tar fuel could cause serious erosion of nozzles, reducing burner efficiency and necessitating frequent replacement. Where it is desired to use high ash content fuel, a monochrome burner head may be fitted to prolong life.

Again, in order to eliminate pipeline troubles, and to ensure proper atomisation, close examination of the fuels would be necessary in respect of viscosity over a range of temperatures. A prepared fuel such as creosote/pitch mixture is made to specification, and an installation may thus be designed to suit the fuel.

The viscosities of coal gas tar and water gas tar were measured and the results plotted against the viscosity curve for the standard creosote/pitch mixture. This curve showed that the water gas tar was more viscous at low temperatures where primary heating would take place. At the heat of atomisation, which is roughly between 170°-190°F., the viscosities were similar. The water gas tar and the coal gas tar have similar viscosities, while creosote/pitch is slightly less viscous except at 100°F., where the difference in viscosity is considerable. This can be overcome by raising the primary heating temperature.

Viscosity of a fluid is, of course, a measure of its resistance to flow, and if it is not kept at a constant figure it may have a tendency to reflect on the efficiency of the plant in several ways—*e.g.*:—

(a) Poor atomisation and consequently poor combustion.
(b) Flames too long—the heat not being developed where required.
(c) Impingement of the flame on the brickwork, causing damage to bricks.
(d) Deposit of carbon on brickwork.
(e) Production of smoke.

Description and Operation of the Plant

From the water gas tar storage tank, the fuel is pumped to a secondary tank to give a head of about 15 ft. above the burner nozzles. The capacity of this tank is only sufficient for approximately 2 hours continuous running, and in consequence a continuous feed is necessary. This small secondary tank will, in due course, be replaced by one of much larger capacity.

A small steam coil effectively to preheat the tar and ensure an even supply to the burners is provided in the secondary tank. A 2 in. dia. service is led from the base of the tank, through a suitable isolation valve, to a point immediately over the boiler front. A ½ in. branch is taken to each furnace. These feeds have a steam jacket for about 4 ft. of their length to effect final preheating.

The burners (which were supplied by Lancashire Tar Distillers, Ltd.) are inserted through a 1½ in. dia. hole immediately above the furnace door. Steam is injected behind the burner nozzle, the nozzle being so designed that the steam imparts a swirl to the fuel to ensure proper

flame conditions. A needle valve on the fuel supply to each burner gives the control of the supply. It is desirable to have thermometers placed before and after the steam jacket in order to effect proper control of the preheating arrangements.

As, in normal circumstances, our Lancashire boilers are under 'slow fire' conditions, the temperature of the shallow fuel bed should first be raised in order to light the burners ,and the furnace door should be slightly cracked in order to observe the flame. In the initial stages of lighting up, it is important that the furnace doors should not be open too far, as excess air adversely affects flame control.

A slight 'crack' of steam on the burner injector should be followed by a similar operation on the fuel supply valve at the rear of the burner. This sequence of operations should be repeated until desired flame conditions are achieved. The furnace doors may then be closed and the primary air dampers opened sufficiently to give adequate air supply, the solid fuel bed on the furnace grate having previously been pushed back from the front of the grate to allow free travel of the air supply.

It is important in the early stages that the main boiler dampers are fully opened to ensure that the product gases and also unburnt fuel which may accumulate in the early stages of firing are swept clear of the flues. If the flame is extinguished, the fuel steam supply must be immediately turned off for a few minutes to ensure that no pockets of unburnt gas in the flues can ignite and cause blow-back.

With properly controlled flame conditions complete combustion should be readily effected. Some operators prefer slight smoke emission from the stack as a guide that air is not being admitted in excess. The burners should be so set that the flame is directed to clear the brickwork of the bridge, but in no circumstances be allowed to play on the furnace wall.

On simple conversions of the nature described in this paper where the furnace was originally designed for burning solid fuel, it is important to make provisions for adequate air supply, as the requirements of a liquid burner may be in excess of the air needed for solid fuel. After obtaining stable flame conditions, furnace doors should be closed and a close watch kept on the flame.

Visual observation of the flames should show a short broad flame which terminates just over the bridge. A long yellow smoky flame could indicate improperly adjusted burner or inadequate steam atomisation. Too much preheat on the fuel supply may 'gas lock' the burner, causing the flame to be temporarily extinguished with constant risk of blow-back.

As explained, the conversion has only recently been undertaken for emergency use in the event of waste heat boiler failure and in consequence we have not yet been able to make any conclusive tests under full load conditions. The indications are:—

(i) That evaporation will be in excess of nominal output.
(ii) That steam pressure could be raised, comparatively speaking, within minutes on a slow fire boiler held under a pressure of approximately 50 lb. per sq. in.

From observations to date, the conversion described will meet our problem of emergency steam load.

MEETING INCREASING GAS DEMAND

By DONALD G. WILKINSON, District Distributing Engineer, Liverpool Group, North Western Gas Board

The production engineer will say that he can manufacture any quantity of gas (preferably at a constant rate—*i.e.*, base load). The sales and service division will say that they should have a steady pressure at the inlet to every meter irrespective of the total demand over an area. The distributing engineer has the task of uniting these two requirements.

In a town area, where there is already a close network of mains probably working at full caapcity, re development can cause many headaches. The Everton District of Liverpool is such an area. Everton is a high-density area covering about 2 sq. miles with an average of approximately 50 consumers per acre, a total of some 60,000 consumers. In the future, eight and 10 storey flats are to be built; and, while still keeping the average density of 50 consumers per acre, a number of acres are to be allocated as industrial sites. Thus, even if the existing supplies to Everton were sufficient for present-day demands, a considerable increase in load is inevitable and improvements would have to be carried out.

The Everton area is supplied from four points—namely Eccles Street holder station, Wavertree works, Newsham Park governor, and Cherry Lane governor. Eccles Street and Wavertree works are interconnected by a 24-in. low pressure trunk main from which many smaller mains are supplied.

Cherry Lane (medium pressure gas from Linacre works) and Newsham Park (medium pressure gas from Wavertree works) are interconnected by an 18-in. and 20-in. low pressure main. There are two 12-in. mains connecting the 24-in. and the 20-in. mains. The 8-in., 6-in., 4-in. and 3-in. mains, which form a close network over the whole area, are supplied from these four mains. The west area of Everton is supplied by a 12-in. main connected to the 24-in. low pressure main.

Results of Survey

A general pressure survey was carried out, and it was found that at maximum demand, Sunday lunchtime, even though the four governors were clock controlled to increase their outlet pressures from 50 tenths to 60 tenths W.G. and in one case 70 tenths W.G., the heart of the district was maintaining pressures only of 35 tenths W.G. This showed that the pressures in the 24-in. main were not adequate, and that a pressure of 60 tenths W.G. was required at three points to supply the heart of the area at 45 to 50 tenths W.G.

The governor outlet pressures of Cherry Lane, Newsham Park, and Wavertree works could not be increased, as consumers situated close to the governors would be supplied at too great a pressure. Hence it was decided to load the 27-in. governor at Eccles Street.

These tests were carried out over a Sunday lunchtime and showed that even with a governor outlet pressure of 10-in. W.G. (the maximum we could safely try) at Eccles Street, we still could not maintain a pressure of 6 in. W.G. at one of the points on the district. However, pressures in the centre of the district were improved. A portable flow meter indicated a peak load of the order of 285,000 cu.ft. per hour.

The inlet governor pressure at Eccles Street is obtained in one or two ways—either (a) gas from the holder being boosted by an electrically driven booster (500,000 cu.ft. per hour at 10 in. W.G. rise), or (b) gas direct on to inlet governors from medium pressure transmission main from Athol Street works. Hence, as medium pressure gas was already available at Eccles Street, the solution was to move the governor from Eccles Street to a point immediately before the 18-in. connection—a distance of 1,700 yards—and convert the 24-in. main to medium pressure.

There was a 15-in. modern double-diaphragm governor in use on the district which has been a terminal governor. Due to extension of interlink mains this could now be replaced by an 8-in. governor. It was decided to use this 15-in. right-angled governor complete with inlet and outlet valves as the terminal governor for the Everton scheme.

Considerable lengths of main in the Everton area were internally cleaned before and during the governor installation period. Extensive pressure surveys have indicated that all our customers in the area are now receiving pressures of the order of 45 tenths W.G. on inlet to meter even at peak hours.

A check taken during a recent Sunday peak hour showed that the pressure drop from Eccles Street to the inlet of the 15-in. terminal governor was 8-in. W.G. From this it is obvious that the station governor at Eccles Street would have had to be set to an outlet pressure of some 14 in. W.G. to give similar pressure conditions in Everton.

There is considerable satisfaction in knowing that such a densely populated area is now adequately supplied.

GAS TO CRAWLEY NEW TOWN

FROM A PAPER TO THE LONDON AND SOUTHERN JUNIOR GAS ASSOCIATION ON JANUARY 15, 1954, BY

J. E. STEEL,

Assoc.M.Inst.Gas E., Technical Assistant to Distributing Engineer, East Surrey Division, South Eastern Gas Board.

The East Surrey Division of the South Eastern Gas Board comprises the former Croydon, East Surrey, and Horley Gas Companies. It covers an area of nearly 300 sq. miles and is one of six Divisions which form the S.E.G.B.

Within the Division, some 20 miles south of Croydon, lies what could have been described in 1946 as a typical Sussex market town—namely, Crawley, having a population at that time of approximately 9,000. Situated on the main London-Brighton railway, with the A.23 Brighton Road passing through the town, and, further, within easy reach of Gatwick Airport, it was in many respects an obvious choice for the site of a satellite town.

It is the problem associated with supplying gas to Crawley New Town via a trunk main that forms the basis of this paper. This trunk main and the necessary pumping plant has, however, been designed not only to meet the requirements of the New Town, but also to afford a bulk supply to the three manufacturing stations in the southern half of the Division. It will in some measure weld together the independent distribution systems that now radiate from the four manufacturing stations within the Division. The main will also afford bulk supplies to Horsham, in the Sussex Division, and Tadworth, in the West Surrey Division.

Broadly, the original master plan prepared by the Crawley Development Corporation consisted of encircling the existing town with a ring road. The western half of the road was existing, being the Crawley By-Pass Road. The eastern half of the circle has yet to be completed. Inside and outside this circular road nine neighbourhoods or estates were to be constructed, on each of which approximately 1,400 houses would be erected, together with the necessary schools, shops, etc. Each neighbourhood covered an average area of 200 acres. The total number of houses to be erected will be 16,200.

On the northern boundary of the town, clear of the residential area, was to be the industrial area—divided between light and heavy and covering approximately 300 acres. Open spaces and parks were not forgotten by the Corporation and, in all, the town was to cover 10.5 sq. miles. Credit must be given to those responsible for this original plan. So far no major modification has had to be made.

The Gas Industry's Plan

It was evident that, without considerable expansion of manufacturing plant either at Horley or Redhill, neither the East Surrey nor Horley Gas Company was in a position to supply the new town, and, in 1947, the Croydon Gas Company was approached by the Ministry of Fuel and Power to afford a bulk supply to Redhill via a new trunk main, to cover in the first instance only the requirements of the new town. With approaching nationalisation, and in anticipation of the manufacture of gas ceasing at Redhill, Dorking, and Horley, it was decided that the supply should be capable of meeting the combined outputs of both the East Surrey and Horley Gas Companies in addition to that required by the new town. Recently, further commitments have been placed upon the trunk main by the request from the West Surrey Division and Sussex Division for the East Surrey Division to supply Tadworth and Horsham respectively.

The quantities of gas that will ultimately have to be afforded from the Crawley main per maximum day are estimated to be as shown in the table on the next column.

Items 1 and 5 have, of course, been estimated by the two Divisions concerned. Items 2 and 3 are based upon the previous maximum day for the particular district, to which 50% has been added to allow for normal district growth.

	Cu.ft. per day.
1. West Surrey Division ..	250,000
2. East Surrey District ..	5,000,000
3. Horley District	1,000,000
4. Crawley New Town ..	3,500,000
5. Horsham	1,000,000
	10,750,000

Considerable thought was given to the question of estimating the maximum day's requirements of the new town. Mr. W. A. Evetts, in his paper, 'Some Notes on Estimating the Gas Demand,' March 27, 1951, to the London and Southern Section of the Institution of Gas Engineers, covered this point very fully in regard to the new towns in his Board's area. Nevertheless, it is felt that this paper would not be complete without some reference as to how the above-mentioned 3.5 mill. per day was calculated. In the first instance the existing conditions that prevailed in the Croydon Gas Company's area were taken as the basis for calculation—namely, a maximum daily consumption per consumer of something approaching 200 cu.ft. and a maximum hour per consumer of 20 cu.ft. Allowance was made for the fact that gas cookers would be installed in only 85% of the dwellings, thus giving a figure of 17 cu.ft. per hr. per dwelling (85% of 20 cu.ft.). To this was added the estimated consumption of the industrial area. Only 10% of the total output of the former Croydon Gas Company was industrial. This percentage was considered to be too pessimistic, and a figure of approximately 40% was finally agreed upon. The final answer to this problem, therefore, may be expressed simply as follows:—

	Cu.ft. per hour.
16,200 houses at 17 cu.ft. per hour ..	275,400
+ approximately 40%	74,600
	350,000

Based once again upon Croydon's conditions, the maximum day was calculated to be 10 times this figure—*i.e.*, 3,500,000 cu.ft.

The information so far available of the true consumption of the town seems to point to a lower figure for the residential area, but with a possibility of the industrial area being higher than our estimates.

Design of the Trunk Main

To take full advantage of the favourable storage position at Redhill, it was decided to transmit the gas to Crawley in two stages:

(1) Croydon to Redhill with side connections, as detailed below, to supply, via district governors, parts of the East Surrey District where poor pressure conditions existed.

(a) At Hooley to supply, via governors, the district of Kingswood, together with the bulk supply to the West Surrey Division via a volumetric governor.

(b) A further connection at Hooley to supply the districts of Hooley and Chipstead via a governor.

(c) A side connection at Merstham to supply Merstham and parts of Redhill (including a post-war L.C.C. housing scheme consisting of 1,400 houses).

(d) At Redhill to supply Nutfield and Bletchingley via a further governor.

(2) Redhill to Crawley with a side connection at Horley.

A new holder (or holders) of 3 mill. cu.ft. capacity would be erected at Crawley, from which the gas would

e boosted into a ring main that would encircle the town.

The second major decision taken was that the pumping ate from Waddon to Redhill would be 500,000 cu.ft. per our and Redhill to Crawley, 250,000 cu.ft. per hour. t that time the main was only committed to the extent f 9.5 mill. per day, which would mean 19 hours pumping er maximum day. Since the addition of the Horsham nd Tadworth supply the hours pumping per maximum ay has been extended to 22. The length of main to e laid was then scaled from the Ordnance sheet after aking a careful survey of all possible routes.

With these facts before us, it was then possible to ive consideration to determining the most economical ze of main. This was rather a laborious business, but nally, having taken into account interest on the capital ost of the main and pumping plant, and maintenance nd running cost of the pumping plant, it was agreed to ay—

1) A 24-in. main Waddon-Redhill.
2) An 18-in. main Redhill-Crawley.

Design of the Ring Main

In view of the varying load that the boosting plant upplying the ring main would have to handle it was elt that any investigation into the economics of the main would be very approximate, and possibly of little practical value. Instead, it was agreed to design the main to work with an initial pressure of 60-in. W.G. This pressure it was considered would enable reasonable size outlet mains to be laid, bearing in mind the considerable length of these mains due to the position of the new holder station.

Further, although the maximum hour's output had already been calculated in respect of the town as being 350,000 cu.ft., allowance was made for the ultimate maximum 10 min. which exists within the maximum hour, and also the unknown requirements of the industrial area, with the result that 500,000 cu.ft. per hour boosters are to be installed at Crawley. The terminal pressure at the inlet of the furthest governor will be 10 in. W.G.

Each neighbourhood will be supplied by its own double-cam clock-controlled governor, with a treble-cam control for the industrial governor to give greater flexibility of outlet pressure control. These governors will be installed below ground in concrete pits, and the control mechanism housed in adjacent pillar boxes.

Individual Estate Principle

In designing the local mains, each neighbourhood is being considered as an individual estate, and it is felt that little comment is necessary on this point, apart from the fact that, as a general rule, duplicate mains are being laid throughout the town. The routing of the mains has, however, presented a few headaches due to the 'Picasso-like' lay-out which many will agree is typical of modern town planning.

It has been the practice of the Crawley Development Corporation to construct all the roads on each neighbourhood before building commences, and this has necessitated the laying of crossings prior to the mainlaying proper. Certain difficulties have arisen by virtue of this, especially when housing lay-outs have been altered after the laying of the crossings. However, taking a general view, it has so far worked extremely well.

During these early stages in the development of the town, and with Redhill, Dorking, and Horley still manufacturing, the quantity of gas passing through the Crawley main is such that it is possible to pump direct with existing boosting plant at Waddon works to the inlet of the ring main governors at Crawley, and also afford a limited bulk supply to Redhill and Horley works, thus permitting the gradual reduction in the make at these two works to commence. The bulk supplies to the two works are via temporary connections; and, in the absence of volumetric governors, are for the present hand controlled. To prevent either of the works from taking too much gas, each holder attendant operates his valve to a pre-determined pressure schedule.

The position concerning pressure loss conditions along the Crawley main is being constantly reviewed, and schedules are prepared at frequent intervals. It has thus been possible to determine the programme for the installation of pumping plant and the erection of holders.

Laying the Main

Before mainlaying commenced, plans were prepared on which the position of other underground plant was recorded. All pipes and special castings for the three sections of trunk main and the ring main were delivered direct to site. The rate of delivery was agreed with the manufacturer, and arrangements were made to enable the mainlaying contractors to complete within the specified time. Schedules were also prepared detailing the order in which the special castings should be delivered. This method of obtaining delivery of the special castings worked extremely well. Segregation valves were fixed at mile intervals, and at each side of railway or stream crossings. In all, nine railway bridges and nine stream crossings were negotiated, and permission was obtained to carry out this work from the Railway Executive and various Catchment Boards. Wherever possible, the main was laid on private property, and of the 40,039 yards of main between Croydon and Crawley, 6,837 yards were laid on private property.

Generally speaking, little difficulty was experienced in obtaining the necessary wayleaves, with the exception of a 1,600-yard section between Redhill and Horley. It was intended to lay this section of main on railway property parallel to the main Brighton line. The negotiations, however, became so protracted, and conditions laid down by the Railway so severe, that the proposal was eventually abandoned.

The alternative, however, was relatively simple, for the proposed line of main was moved two yards west of the original line, and the main laid in farm land beside the railway. Fortunately, only one landowner was involved with this wayleave. As would be expected, the monetary settlement varied considerably with each wayleave.

Route influenced by Holder Site

In the early days some difficulty was experienced in deciding upon the route for the section of main between Horley and Crawley, due to the Development Corporation not agreeing to our proposed site for the new holders. Obviously we were anxious for these holders to be as close to the town as possible, but Crawley insisted that they should be sited in the industrial area and not within the residential area, and the agreed position necessitated mains being laid across farmland and woodland. In particular, the final half mile of one section was laid through very thick woodland and considerable clearance of undergrowth, tree felling, and blasting of roots was necessary. It was agreed with the mainlaying contractor to make a clearance 30 ft. wide along the line of the main, and this arrangement proved satisfactory.

Although this part of the main was laid across country, it is on the line of what will eventually be one of the trunk roads in the new town, the line of which was pegged out for the Board by the Crawley Development Corporation. Concrete marker posts have been erected along the line of this section of the main, as it was almost impossible to record correctly the position of the main on plans. This has turned out to be a wise decision, for much of the clearance has now become overgrown again.

1,260 Yards a Month

The complete trunk main from Croydon to the new holder site at Crawley was completed in 28 months. A maximum of six gangs was employed at any one time and the average rate of laying was approximately 1,260 yards per month. Each gang was visited at least once per day by a Board's representative, and any alterations regarding depth and line of main agreed with the contractor. Necessary levels were taken at frequent intervals. The policy of a Board's representative setting out the run of the main has always been strictly adhered to. This should not be taken as a criticism of the standard of contractors' workmanship, for normally their employees are men of wide experience and extremely capable.

Mechanical equipment was, of course, used extensively. At one stage of the contract, three mechanical excavators, six cranes, and numerous compressors were in use. The extensive equipment that a contractor has at his command

makes it difficult for any divisional distribution department to compete with a contractor on large mainlaying projects.

Existing boosting plant at the Croydon works is not adequate to meet the requirements of the Crawley main, and by the winter of 1954-55 additional plant will be required. Two 500,000 cu.ft. per hour Bryan-Donkin steam-driven turbo-boosters (one set acting as standby) are to be installed at the works to transmit the gas on the first stage of its 20-mile journey to Crawley.

These two sets are to be installed in the existing booster house on the works, although to do this has necessitated a considerable extension to the existing house and the re-siting of existing plant within the house.

In view of the wide range of efficient speed control possible with steam-driven boosters, it was decided to install two sets each capable of meeting the maximum load, and not adopt the principle of splitting the load between three sets as in the case of the Redhill and Crawley boosting plant. A Bristol flow recorder will be fitted on the inlet main to the new boosters.

The first of the two holders will be completed by the winter of 1955-56, together with the booster house and boosters. The arrangement of the boosters is similar to the Redhill layout—namely, three sets with any two running in series and the third set as standby. Each set has a capacity of 500 000 cu.ft. per hour at 30 in. W.G. giving a maximum throughput of 500 000 cu.ft. per hour at 60 in. W.G. when any two sets are running. No electricity is available on the holder site, and the boosters will be driven by Diesel engine. Inlet regulators will be installed on the immediate inlet to each holder. The regulators will close when the holder is full, re-open when stock has been lost, and also close when the inlet pressure falls below a predetermined level. The inlet to holder main and outlet of booster main will be connected via a back pressure valve, which will act as a safety governor.

ASPECTS OF CONSUMER SERVICE

FROM A PAPER TO THE SCOTTISH JUNIORS (WESTERN) ON JANUARY 15, BY

WALLACE A. GREEN,

Distribution Engineer, Paisley, Scottish Gas Board.

WE ARE entitled to expect a high standard from our employees whose specific duty it is to make contact with consumers by telephone, by correspondence, or by meeting them in our showrooms and service centres. However, other grades of employee are in regular contact with consumers. Indeed, most of their work is carried out in the homes and premises of consumers, and every effort should be made by us to impress on these employees the need for care and courtesy while carrying out their duties. It is important that the meter reader should create an impression of efficiency and willingness to help; and I should like to see our meter readers and collectors attired in a distinctive uniform.

The standard of conduct and workmanship of the gasfitter is the foundation on which most consumers build their appreciation of the service given to them by the Board. An untidy, careless gasfitter, whether he be installing an appliance or repairing one, can undo completely everything that has been done previously to build-up goodwill. Conversely, a job well done by a careful, courteous gasfitter, can compensate any impression in the mind of the consumer that the attention at the beginning was not of the best.

Showrooms and Installation Practice

The Board has opened showrooms where none existed, or extended facilities in places where premises were not commensurate with the size and importance of the towns in which they were situated. Wherever possible, showrooms have been sited in main shopping centres, and many new attractive buildings have been taken.

Only recently, new premises for showrooms were acquired in Paisley. While it was not possible to obtain premises in the central shopping area, a building was acquired nearby. The Board gutted these premises, which were most unattractive, and constructed on modern lines a most excellent building for the exhibition of appliances and for the conduct of demonstrations, etc. The prestige of the Scottish Gas Board rose in our town when these premises were opened officially a year or so ago.

At Paisley, an installation 'promise period' is laid down by the District Manager. The showroom attendant is, therefore, able to promise installation within this period, and to do so with confidence, knowing that the installation section of the distribution centre will not let them down. As and when circumstances arise which prevent the execution of orders within the 'promise period,' it is the responsibility of the District Manager to make such changes as he may consider necessary and desirable. Of course, every effort is made by the installation section to honour the normal 'promise period.'

The need for a high standard of installation and maintenance practice cannot be stressed too strongly. And I hope that the Standard Codes of Practice are now generally in use.

The use of compo, iron, or copper tubing, is a debateable subject. Each has its own particular merits. Compo pipe has the advantage of being easy to install and is not liable to corrosion, but it is susceptible to damage and, unless adequately supported, will tend to sag. Steel tubing, in spite of its attendant high labour costs and maintenance problems due to corrosion, has been a very popular type of supply pipe for many years, but it is gradually losing favour, both for internal work and for services. We find copper the most suitable of all materials for gas supplies, since it is light, ductile, durable, and smooth; it is also non-corrosive and exceptionally neat in appearance. I feel that, although copper is more expensive than either compo or steel, its general use on a long-term policy is desirable, since maintenance in all its forms is almost completely eliminated. Quoting from actual experience where gas escapes are concerned, I find that where copper supplies are in use, these have been reduced by over 90%.

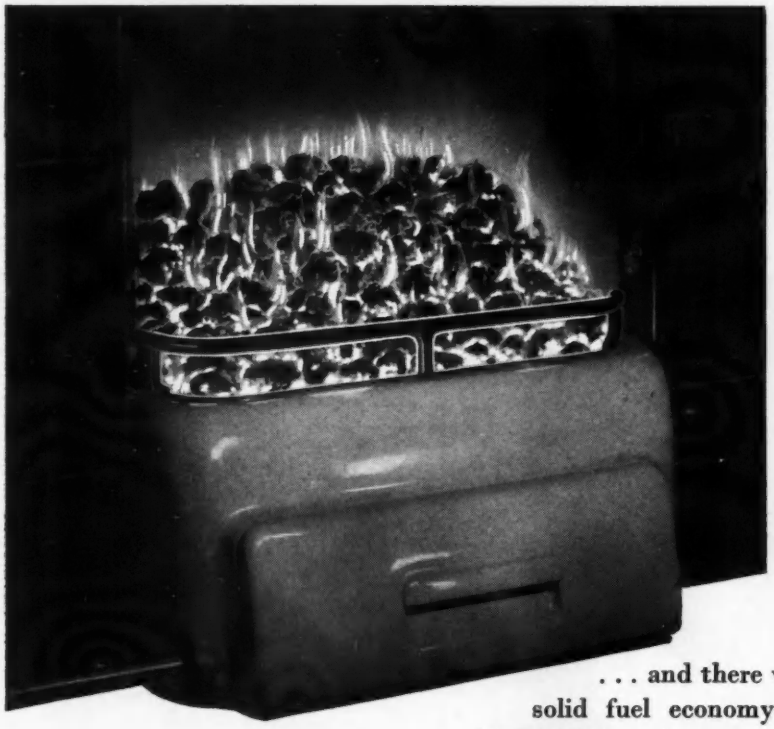
Following an investigation of various types of compression joints some years ago, and having regard to their respective costs and appearance, it was finally decided to employ the solder ring capillary joint, since this provided the most positive means of jointing, while its appearance was far superior to any other. 'Yorkshire' fittings and copper tube to B.S.S. 659/1944 are now used exclusively for all installation work at Paisley, and the fitters have become so accustomed to their use that much time and labour is saved over any other form of supply tubing.

Agreement with Plumbers

This may be considered the appropriate point to draw attention to agreements which have been entered into by the Board on the one hand, and the Federation of Master Plumbers on the other, whereby local plumbers will carry out for the local gas undertaking the installation of gas cookers and water heaters at fixed rates, which have been freely negotiated between the contracting parties. For my part, I am glad to learn that this step has been taken. It will bring us into closer touch with our local plumbers, and from this I expect much good.

In the past the standard of installation work carried out by plumbers has been low. Yet plumbers employ good tradesmen having the ability to carry out first-class jobs. Unfortunately, these plumbers have operated in circumstances which have prevented their giving of their best as far as gas installation work is concerned. For example, a great deal of such work in new houses had

(*Continued on p. 355*)



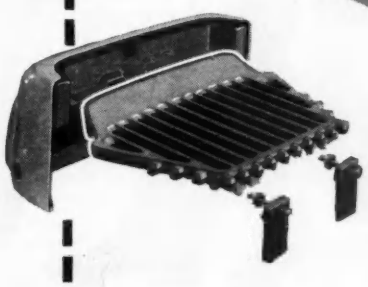
There's more cold weather on the way . . .

. . . and there will still be a big demand for solid fuel economy grates. Meet it with the NEWBOLD—the grate that gives maximum radiation at hearth level.

The NEWBOLD

ECONOMY GRATE

- FITTED WITH GAS ATTACHMENT
- BURNS COKE—THE CLEANEST OF FUELS
- EASILY CLEANED
- SAFE, EFFICIENT AND ECONOMICAL
- EASILY AND QUICKLY INSTALLED
- PERFECT CONTROL FOR FAST OR SLOW BURNING
- NO COSTLY REPLACEMENT OF FIREBRICKS
- WILL PLEASE AND SATISFY YOUR CUSTOMERS



The above illustration shows the Newbold with deepening bar removed and the safety plate in position for all night burning. On the left is shown the very simple construction. The hearth can be easily cleaned by lifting out the grating and supports complete.

FLAVELS *of* LEAMINGTON

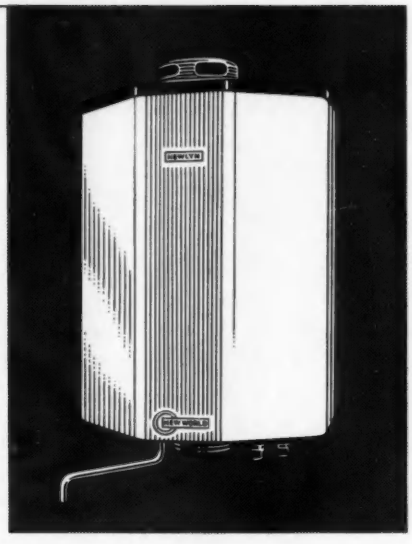
★ *Approved by the Min. of Fuel & Power*

· MAKERS OF FINE COOKING AND HEATING APPLIANCES SINCE 1777 ·

She'll never be

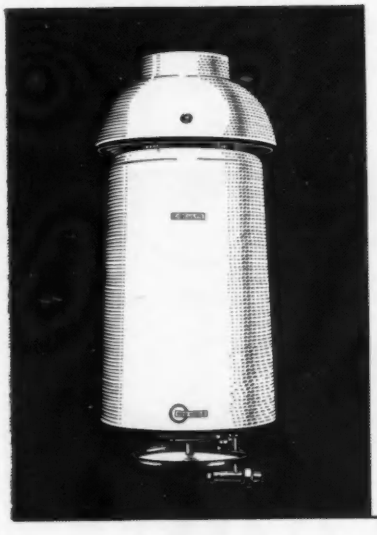
RADIATION GROUP SALES LTD. 7 STRATFORD PLACE, LONDON W1 MAYFAIR 6462

more certain...



When you've explained what **NEW WORLD** Water Heaters will do, the rest is easy. Just what she was looking for, she says. She's never been more certain that her husband would agree. She's never been more certain of having abundant hot water for all their needs.

The NEW WORLD provides...



FOR THE CONSUMER

Abundant hot water on tap immediately available at the same temperature, winter and summer, with economy strictly controlled by the Regulo . . . **Maximum Service**

FOR THE UNDERTAKING

Normally no alteration to the meter service, no peak load problem and nothing further to worry about . . . **Minimum Servicing**

THE CIRCULYN

The NEW WORLD Circulyn can be fitted to an existing hot water system as an auxiliary, or as the sole means of supply and gives an abundance of hot water summer and winter to the bath, basin and kitchen sink: it does not dispense with the airing cupboard facilities.

THE NEWLYN

The NEW WORLD Newlyn Sink Heater, in a normal household working day of 16 hours, gives 75 gallons of hot water at 140°F., at the kitchen sink or hand basin. It holds the same temperature summer and winter; hot from the first drop.

RECOMMEND

NEW WORLD
PRODUCT OF Radiation Ltd.

Here comes the bride

(OVER 400,000 OF THEM THIS YEAR)

and the **HONEY***moon starts here*

400,000 marriages in 1954, and 400,000 brides setting up home. There will be a year-round Honeymoon in the Gas Showrooms with the Parkinson Paragon Gas Cookers.

The Paragon will match any scheme whilst the clean design will enhance any kitchen.

The easily cleaned hotplate will win their hearts.

A 'billet-doux' for Little Bill. He husbands the housekeeping money.

PARKINSON

PARAGON

In Honey, Grey and All White

THE PARKINSON STOVE COMPANY LTD., STECHFORD, BIRMINGHAM, 9. *A member of the Parkinson & Cowan Group*

to be competed for on a comparatively low standard of specification. A plumbers' schedule is designed in such a manner as to require the competitor to execute the work of installation within the percentage which he adds to the cost of the material required for the job. Speed of installation was, therefore, important, and as a result standards of workmanship fell.

It is the responsibility of the gas undertaking to set a standard, and by every means open to us to raise existing low standards through joint consultation with the building authorities. It will be made known to plumbers that the gas undertaking set a high standard and that it will be to the best interests of the plumbers to attain the standard laid down by the gas undertaking and the building authority.

We hope to see the end of the installation of pipes which are too small, and the overloading of gas meters. We hope that plumbers will seek our advice on all matters affecting the installation and operation of gas appliances. We must be ready and willing to give this advice immediately it is called for.

A further agreement has been entered into whereby the local plumber will receive a trade commission.

Enamel Finishes

My remarks on appliance design and finish concern chiefly the abnormal number of complaints that are being received regarding the enamel finishes of various cookers. The most common complaint arises with the pressed steel type of cooker, the enamel on which either discolours or chips after a short period of use. The chipping also occurs in the handling of the appliance, and when assembling after installation, which suggests that the quality of the enamel used is either very poor or unsuited for use with pressed steel, though it was suitable for cast iron. While the use of pressed steel has assisted in no small way in improving the sales appeal of appliances generally, I feel that steel has been employed too generally by the manufacturers, and is being used where cast iron would be better with enamel finish.

A general move towards standardisation of appliances appears to have taken place in recent years, the most desirable result of which should be the reduction of the wide variety of spare parts which have had to be carried by most undertakings—a feature which should ultimately reduce costs. An early attempt to improve the quality of a wide range of cooker rail cocks is necessary, since a high percentage of the complaints received concern escapes at these cocks. The most efficient and reliable rail cock is the spring-loaded vertical self-seating type, which, if fitted to every cooker manufactured at the present time, would almost completely eliminate complaints of escapes at these rail cocks.

General Maintenance

An efficient 'maintenance and complaints service' benefits consumer and gas undertaking alike. Of course, the extent to which these services can be carried is dependent on the costs involved. A good maintenance service costs a considerable sum of money, and such costs have to be recovered either directly as a specific charge, or indirectly in the price of gas or in the price of the appliance. Maintenance schemes vary considerably throughout the country between comprehensive periodic inspection by qualified fitters and the service which is available to the consumer on demand—*i.e.*, only when a complaint is made directly by the consumer. The latter scheme is undesirable, since a large number of consumers do not report a defect in a gas appliance, with the result that when service is ultimately required, the appliance in question may need a complete general overhaul, as opposed to a minor adjustment.

Appliances should be examined at regular intervals. The work can be executed in two general ways—*viz.* (1) whole house inspection, and (2) appliance inspection. From my experience of these schemes with various undertakings, I agree with both methods. Each has peculiar advantages which provide a form of service readily acceptable to the consumer.

Whole house inspection is generally favoured because a fully qualified gasfitter can examine and service all the appliances in the house on one visit, whereas, in the case of a consumer who has a variety of appliances, several men will have to call to examine one appliance after another, should the appliance inspection scheme be adopted. The system to be employed should be related to the type of appliances which are to be serviced, and to the frequency of the calls that will be required.

It is impossible to estimate the use to which an appliance will be put, since no two consumers use their appliances for exactly the same period every day. Large-scale consumers, are, however, more reliable in this respect, because most of their appliances are in operation for specific periods. Local conditions will therefore influence the type of scheme to be adopted.

Regarding the reconditioning of appliances and the repairing of worn parts, so far as water heaters are concerned it is the usual practice to renew the whole water body when the inner lining becomes 'burnt-out' as a result of wear and tear. The approximate cost of this replacement is £2 15s., inclusive of fittings. At Paisley we make a new inner lining for these bodies of 18 w.g. sheet copper, a template being used for the purpose. When the new lining is completed, it is soldered into the body in exactly the same manner as would be done by the manufacturer, the body then being fitted to the heater. This gives the body a further period of life which may reach two to three years, when a repeat process is carried out in preference to the fitting of a new body. The cost of this repair amounts to 12s. 6d.

Washboilers, after a period of use, usually show signs of wear by causing iron moulds on the laundry. This is due to the tinning on the boiler drum having worn away. Rather than replace this drum with a new one, which would cost about £3 2s., plus fitting, I find that the retinning of the drum can be effected quite efficiently at a cost of £1 2s. 6d.—an appreciable saving to the consumer. This has been the practice at Paisley for many years.

Choked Services

Careful planning of new mains and services must be the first consideration of the distribution engineer. Pressures direct from the mains during peak loads should be tested regularly. The complaint of inadequate pressure can usually be traced to a choked service pipe; and where a whole property is involved, this may affect the gas supply to 10 or 12 separate consumers. Immediate attention should, therefore, be given to complaints of this nature. This type of work can be speeded up considerably by the use of a suction service cleaner, but it must be operated only by competent men who have received a thorough training. For instance, in a property of, say, 12 consumers, it may be necessary to install 12 new meters, if the precaution of disconnecting them or turning the meter stopcock properly 'off' has not been complied with. If this is allowed to happen, say, only once a week, then the annual cost of replacing these meters will be absurd.

The efficiency of the cleanser is considerably increased if the service pipes are of reasonable size and condition. I have achieved as high as 85% successes on service pipes of this nature. On smaller diameter pipes—*e.g.*, ¼ in. to ½ in., and in some cases up to 1¼ in. diameter, where the service pipe is almost in a state of disintegration, success is practically impossible. The only solution is to renew the service.

The usual practice at Paisley is to renew the service from the main into the close mouth Class B tubing, thereafter using copper tubes and 'Yorkshire' fittings to each meter position. The additional cost involved in using copper is amply repaid by the saving effected in installation and maintenance costs. When carrying out the renewal of a service pipe, due consideration should be given to the potential load factor so that a pipe of adequate size can be fitted.

The cost of renewing or enlarging a service pipe should, in my opinion, be borne by the undertaking, since the increase in revenue obtained from the increased sale of gas should ultimately pay for the work. Again, the consumers who find such a 'big improvement in their gas supply,' will be more induced to consider the purchase of new apparatus.

HIGH PRESSURE BULK SUPPLY

FROM A PAPER TO THE EASTERN JUNIOR GAS ASSOCIATION ON JANUARY 27, 1954, BY

R. O. EMMONY,

Assoc.M.Inst.Gas E., Cambridge Division, Eastern Gas Board.

For some time it has been realised that there are economic and technical advantages to be gained in certain areas from the centralisation and/or co-ordination of gas production following the linking up of undertakings. In fact, such integration has taken place, or is now taking place, in many parts of the country. Within the Cambridge Division of the Eastern Gas Board there is a scheme of integration which consists essentially of a series of linkages based on three major manufacturing stations.

The first factor to be considered when planning a high pressure bulk supply scheme is the quantity of gas to be transmitted during the effective life of the apparatus installed. A reasonably accurate estimate of the potential domestic and industrial demands of the district to be supplied is essential from both technical and financial aspects, for the estimated future load is the basis upon which mains sizes, pumping pressures, and compressing plant capacities are calculated.

The method used to estimate future gas demands within the Cambridge Division of the Eastern Gas Board is based primarily on the estimated future population of districts for the years 1961-62 and 1971-72 obtained from the respective Planning Departments of the eight Administrative County Councils concerned with this area. Although it would be ridiculous to suppose that any person using any method could anticipate accurately the future requirements of a community over two decades or more, it is nevertheless considered that a method of estimation which is based on Planning Department figures, and where all contributory factors are carefully analysed and local conditions fully considered, will result in estimates of future gas demands which are intelligent general assumptions.

The application of this method requires the adoption of certain basic assumptions in order that a local planning department's estimates of future increases of population and dwellings can be related to the additional number of consumers, from which, in turn, the future gas demand can be estimated. The assumed future annual consumptions per consumer and the various ratios which have to be used to estimate future gas requirements in terms of annual, maximum and minimum days, maximum and minimum hours, and peak instant demands, all vary from district to district. Therefore these basic assumptions have always to be made with an eye to local conditions and characteristics.

To obtain as high a load factor as possible on a proposed high pressure bulk supply scheme, it is necessary for the gas to be transmitted at as constant a rate of flow as can be achieved. Due to seasonal fluctuations, the daily load varies considerably throughout the year, and this will introduce a variable load factor which considerably complicates the issue. Presupposing that holder storage is adequate at the receiving end of a bulk supply main, it is possible to obtain a constant flow throughout 24 hours by transmitting gas throughout the day at a rate of 1/24th of the day's requirements. However, due to the inability to estimate ultimate gas requirements with any great accuracy, and in order to provide a certain degree of latitude in the operation of pumping plant, it is considered that the pumping rate should be based on 1/20th of the day's requirements. Under ideal conditions, the maximum pumping rate could be made equivalent to 1/20th of the ultimate average day's requirements, thereby ensuring a high load factor on the system; but this presupposes adequate holder capacity at the receiving station. It is usually more practicable to base design calculations on a maximum rate of pumping equal to 1/20th of the ultimate maximum day.

The potential gas demands of the Cambridge Division have been estimated for the years 1954, 1969-70, and 1984. These years have been designated initial, intermediate and ultimate stages of development. The economics of a bulk supply scheme can be determined under conditions occurring in these different years—or, for that matter, under a variety of conditions occurring in any year of the development period. A decision has therefore to be made as to which set of conditions shall be used to decide whether the proposed scheme will be an economical proposition.

Stages of Development

If the economics of a scheme are based on the present demands for gas in the district to be supplied, then, unless the degree of development over the years is to be very limited, there is a possibility that the scheme will be rejected on economic grounds due to the distribution costs being so high as to exceed the estimated saving due to centralisation of gas production. At the other end of the scale, the assumed ultimate demand for gas is sometimes used as a basis upon which the economics of a proposed bulk supply scheme are calculated. By this method an unduly optimistic result will be obtained, and a scheme which, on paper, may appear to be justified economically, may, in fact, have such a high cost per therm of gas distributed during the early stages of development that for a major part of the effective life of the apparatus installed the distribution costs may exceed the saving in production costs.

To obtain a true indication of the economics of a proposed bulk supply scheme, some development stage between present and ultimate must be chosen and the estimated annual quantity of gas to be supplied at this stage used to calculate the costs per therm of gas transmitted. However, before any attempt can be made to establish this intermediate stage it is first necessary to decide what year in the future shall constitute the ultimate stage of development for the particular scheme being designed.

If the estimated annual charges of a proposed bulk supply scheme are to bear any relation to actual conditions, the decision as to what year shall constitute the ultimate stage of development must be governed by the probable life of the plant and materials to be used. Assuming a continual development of gas sales, the maximum quantity of gas which the apparatus will be called upon to handle in a year will be that amount which is transmitted during the last year of the useful life of the plant installed. For all practical purposes it is considered reasonable to assume that the ultimate stage of development will therefore be the last year of useful life of the pumping plant.

For determining the application of rates of depreciation, the Gas Council has drawn up a schedule detailing the assumed life span of all plant and materials used in the gas industry. In this schedule a 30-year depreciation period is quoted for gas pumps and compressors, including driving units. On this basis, a 30-year development period may be assumed for a bulk supply scheme and all calculations relating to the capacity of compressors, horse-power of prime movers, and the maximum pumping pressures, can be based on the estimated ultimate demand occurring at the end of this period.

The Intermediate Stage

Although pumping plant capacities and the ultimate maximum working pressures should be calculated from the estimated annual gas requirements at the ultimate stage of development, the most economic combination of mains sizes and pumping pressures should first be determined using the estimated annual gas requirements at a definitely established intermediate stage.

Unless the degree of development of the district to be provided with a bulk supply of gas is to be very limited,

the economics of a system change considerably as the demand for gas develops. At the initial stage of development pumping costs are relatively low but the overall cost per therm of gas transmitted is high, while at the ultimate stage, although pumping costs will be increased, the overall cost per therm of gas will be low. At an intermediate stage, however, the overall cost per therm of gas transmitted will be the average of the cost per therm throughout the chosen development period.

The intermediate stage of development will be reached when one-half of the estimated total quantity of gas to be supplied in the development period has been transmitted. Given an adequate number of accurate estimates of annual requirements of a district which is to be supplied from a bulk supply main, it would be relatively simple to determine the intermediate stage, but as forward estimates of gas demands can at best be only intelligent assumptions, there is nothing to be gained by fixing the intermediate stage with precision. For all practical purposes the intermediate stage can be taken as occurring at approximately the middle year of the development period, and the economics of a scheme calculated using the estimated annual requirements in that year. Adjustments should, of course, be made to allow for any sudden increase in the gas demand of a district due to large-scale industrial development if it is known from the development plans that such a development will occur.

Selecting Size of Main

The selection of the most suitable size of main for any specific set of conditions is a matter of economic compromise between the capital charges on the main, the capital charges on the compressing plant, and the pumping costs. The most economical main size is that which results in the lowest annual charge under average conditions. At the same time, however, due regard must be paid to practical efficiency and limitations imposed by the use of certain materials, or the need to limit maximum pressures due to the proposed route of the main passing through built-up areas.

All relevant factors having been considered and the ultimate potential gas demand decided upon, the calculation of initial pressures which will result both from the use of different pipe diameters and at the various stages of development is a relatively simple arithmetical exercise involving the use of a reliable flow formula. If reliable and accurate results are to be obtained from these calculations, it is necessary to use a flow formula which allows for the use of a variable coefficient of friction under different conditions of gas flow and pipe diameters. Unwin's high pressure formula, as modified by Stephen Lacey, should be used.

The Code of Practice for the Testing of Gas Mains before putting into Service, which was included in the Report of the Chairmen's Technical Committee of the Institution of Gas Engineers, 1949-50, contains the statement that cast iron pipes are not recommended for working pressures over 40 lb. per sq. in. It is considered that 30 lb. per sq. in. should be the maximum design pressure for use with cast iron mains to allow a margin above this pressure for increasing the flow, and for estimated working pressures above 30 lb. per sq. in. it is suggested that steel mains should be used.

In borderline cases it will often be found that the higher annual charges on steel mains will swing the economic balance in favour of spun iron mains and lower pumping pressures; but on long-distance pipelines, especially where the rate of gas flow is not excessively great, it will invariably be found that relatively small diameter steel mains operating at high pressures will be the most economical.

However, it may be necessary to limit the maximum working pressure of the system for other reasons, due, for example, to the route of the main passing through a built-up area in close proximity to residential property. Therefore, even in the preliminary design stage, the planning engineer should bear in mind all the practical difficulties likely to be met with in the implementation of a proposed scheme.

When the necessary data have been obtained, it is a relatively straightforward matter to calculate the horse-power required to drive the gas compressors under the different conditions of initial pressure and gas flows which result from the use of different pipe diameters and at the various stages of development.

The efficiency of compression varies appreciably with the type of compressor, and aslo with the rate and pressure at which gas is pumped. These factors must be taken into account when calculating the horse-power requirements under different conditions of initial pressures and rates of flow.

Choice of Compressor and Prime Mover

The choice of suitable compressors and prime movers for any particular bulk supply scheme involves the careful investigation of the performance characteristics of various types of gas pumping machines, with their associated prime movers. It is important to use pumping plant having a relatively high efficiency over a wide range of load. In this respect the efficiency of the prime mover at low loads is as important as that of the compressor.

Although the reciprocating type of compressor can be used quite successfully at comparatively low pressure, it really enters the field of gas pumping when pressures in excess of 10 lb. per sq. in. are required, and individual units can be obtained in various sizes up to a maximum capacity of about 600,000 cu.ft. per hour for single-stage machines, and 300,000 cu.ft. per hour for two-stage machines. Beyond these sizes, the machines tend to become too large to be practicable. The upper pressure limit for a single-stage machine is generally reckoned to be about 40 lb. per sq. in. For initial pressures higher than this, and up to approximately 120 lb. per sq. in., a two-stage machine should be used.

Apart from the suitability of this type of compressor in regard to pressure and volume range for a large proportion of integration schemes, reciprocating compressors possess one great advantage over many other types in that they maintain a relatively high efficiency at light volumetric loads. It is usually found that the full-load efficiency of 68% for a well-designed compressor will be reduced by less than 10% when operating at a quarter full load. It will be realised, however, that this figure is the efficiency of the compressor only; and when estimating running costs the efficiency of the prime mover has also to be taken into account. In this respect, it is important that the type of drive chosen should possess similar high efficiency characteristics at low loads.

There is one other important factor to be borne in mind when choosing the type of prime mover to be used for a particular bulk supply scheme, and that is the comparative costs of the fuel required for the different types of driving units which are suitable for use with reciprocating compressors. In the past the most usual types of prime movers used with reciprocating compressors were steam engines and electric motors. However, with the improvements made in the design of oil engines during the past 15 years these have become increasingly popular and have proved to be a most economical method of obtaining power.

Having decided upon the most suitable type of compressing equipment, and estimated the total capital costs involved—taking into consideration the need for standby plant and the advantages obtained from the 'stepping' of the units of compressing plant if the scheme is sufficiently large to justify this type of installation—the annual charges may be taken as 12.4% of the capital cost. This figure is based on an expected life of 30 years.

Annual Pumping Costs

Pumping costs depend mainly on the three following factors:—

(a) The horse-power required at the compressor shaft—which in turn depends upon the volumetric output of the compressor, the pressure rise required, and the efficiency of compression.

(b) The cost of power required for compression—which in terms of pence per B.H.P. per hour depends upon the actual cost of the type of fuel used and the efficiency of the prime mover.

(c) The pumping time.

Having calculated the horse-power requirements under full load conditions which result from the use of different

pipe diameters and at the various stages of development, and decided upon the type of prime mover to be used—thereby being able to calculate the cost of power required in terms of pence per B.H.P. per hour—it now remains for the estimated total pumping time per annum to be decided before the annual pumping costs can be calculated.

In the case of direct supply it could be assumed that the pumping plant would run continuously 8,760 hours per annum, but as it would only be working at low loads for much of this time the pumping time could be assumed to be well below this figure. One authoritative source has suggested 7,000 hours per annum as being a reliable figure.

It will be appreciated that it would be extremely difficult to estimate with any degree of accuracy the actual annual pumping time at the various stages of development. In any case the final estimates for annual pumping costs would gain little in accuracy, being based on horse-power requirements under full-load conditions. Therefore, while acknowledging the inaccuracy of estimating annual pumping costs using a theoretical minimum pumping time under full load conditions instead of using an annual pumping period based on 20 hours pumping per day under average load conditions, it is submitted that this simple method will provide a reasonable basis for the comparison of costs.

Mainlaying Costs

Before it is possible to make any estimates of mainlaying costs it is necessary to determine the type of ground through which the main will be laid, as this has an important influence on the costs. Geological survey maps, route surveys, and enquiries with other utility undertakings possessing local experience, all play their part in collecting the information necessary to determine the probable cost of excavation. Not only the type of ground, but also the top surface conditions, the extent to which mechanical aids can be employed, the time of year in which the mainlaying work will be carried out, the accessibility of the site, and so on, must be taken into account if any attempt is to be made to secure a reasonably accurate estimate of mainlaying costs.

The total cost of mainlaying for the various alternatives having been estimated, it is necessary to calculate the annual charges on the mains in order to determine the most economic combination of size of main and pumping pressure. For spun iron mains this annual charge may be taken as 5.8% of the capital cost of the mains, but if steel mains are to be used then the annual charge may be taken as 6.9%. These figures are based on an expected life of 45 and 30 years respectively.

The Economic Combination

Sufficient information on the economics of each of the alternative schemes should now have been obtained for it to be possible to determine which scheme has the most economic combination of size of main and pumping pressure and will in consequence result in the lowest annual costs at the intermediate stage of development.

In the development of a bulk supply scheme involving the laying of considerable lengths of main there is invariably a strong case for avoiding laying the mains in public highways. The advantages of cross-country mains can be summarised as follows:—

(i) Lengths may be shortened, with consequent lower pumping pressures or smaller diameter pipes.

(ii) Congestion of services in highways is minimised.

(iii) Disturbance of highways and the subsequent expensive reinstatement is avoided.

(iv) Inconvenience to the general public is avoided.

(v) Greater use of mechanical aids increases the speed of mainlaying and reduces the labour requirements.

It is not possible to estimate with any great degree of accuracy the cost of wayleaves and compensation. Land damage rarely affects the wayleave cost but comes under individual compensation to either owners or tenants. Sometimes a basic wayleave cost is charged irrespective of the quality of the land, and sometimes the charge per unit length of main laid is reduced as the length of main increases. On the other hand, large utility companies often have a set charge per unit length from which no deviation is made whatever the length involved.

It is generally considered that where it is not possible to obtain a grant of easement for a nominal lump sum a capital charge of 5s. per yard or an annual charge of 3d. per yard of main laid provides a basis for negotiation.

An exception is the scale of charges for easements for gas mains in British Transport Commission's property, in which easements for mains up to 12 in. diameter laid alongside the permanent way are charged at £45 per mile per annum, which is capitalised on a 4% basis where permanency is granted. For mains crossing the permanent way the charge is 30s. per annum up to 12 in. diameter for a crossing up to 100 ft., and *pro rata* in excess of this length; or, where permanency is granted, the cost is £37 10s. per 100 ft.

Compensation charges are more difficult to assess accurately, for so much depends on the season during which the mainlaying operations are carried out, the type of land through which the main will be laid, and the value of the crop. It will obviously be an advantage to plan any mainlaying operations so that the main can be laid through agricultural land between harvesting and sowing, but on large jobs this is not always possible.

One other item of cost should be taken into account in connection with wayleave charges, and that is the cost of legal fees and stamp duties. Approximately £10 per wayleave is considered a sufficient allowance for this purpose. Where the exact number required for a particular scheme is not known, then an average number of wayleaves per mile of main laid in private land must be assumed to permit an estimate to be made of total wayleave costs.

Cathodic Protection

Corrosion control is rapidly developing into an established function of engineering with specialist 'corrosion engineers' who have already carried the practical mitigation of corrosion to a high degree of effectiveness.

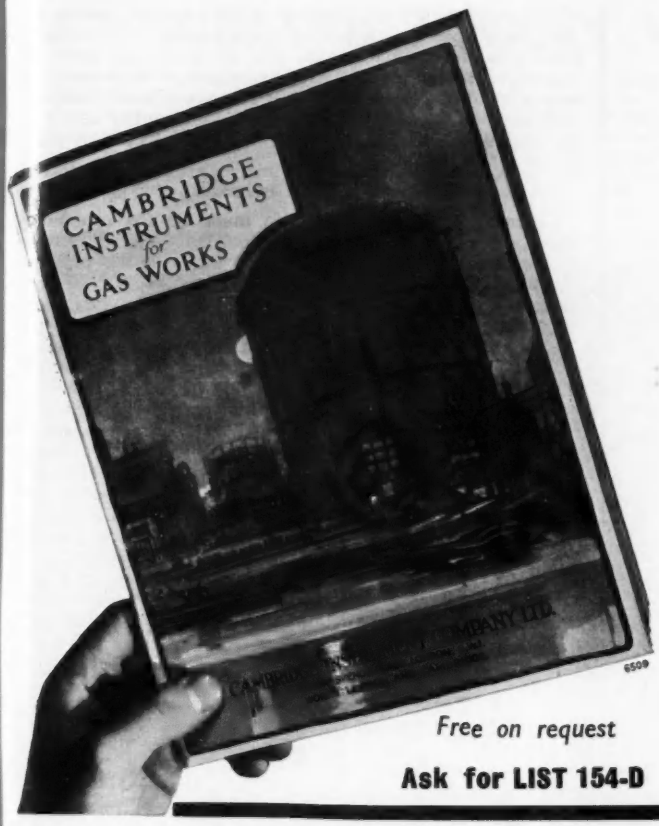
Corrosion of iron or steel in the presence of moist ground or water is now recognised as being due to a chemical reaction which is inevitably accompanied by a flow of electric current. Whether the corrosion be due to the metal coming in contact with soil of varying soluble salt, oxygen, and water content, or by anærobic corrosion which is often found in water-logged ground due to the presence and activities of sulphate reducing bacteria, there is always polarisation and flow of current from anodic metal to cathodic parts. In the process metal ions leave the metal surface at the anodic points, causing corrosion.

If it can be arranged that the metallic structure concerned is maintained at a slightly negative potential to its surroundings so as to keep it entirely cathodic, corrosion will be prevented. This is the basic principle on which cathodic protection methods are based; and wherever it is employed the aim is to maintain a small current through the surrounding soil or water into the metallic structure being protected. This is normally secured by maintaining the metal at a potential of −0.85V to a standard half cell, although where anærobic corrosion is suspected a potential of −0.95V is considered to be the minimum negative potential required to obtain effective protection.

There are two main methods of application, one in which a negative charge is imposed on the pipe or underground structure from a suitable external D.C. supply, and the other by the use of sacrificial anodes of a high purity magnesium alloy which has a high electro-chemical voltage to iron. The method adopted for any particular scheme will depend on local circumstances, but the impressed current method using an external D.C. supply is generally preferred because the electric power requirements are far more cheaply obtainable from the mains than from an electro-chemical source. This method of protection is usually well suited to long pipe runs having high electrical conductivity and has been extensively used in America, although there are cases where it is an advantage to use sacrificial anodes.

The actual cost of cathodic protection depends on many factors. The principal ones are the length and diameter

(*Concluded on p. 360*)



INSTRUMENTS
for
GAS WORKS

THIS USEFUL LIST

contains details of many instruments specially designed to assist the Gas Engineer. It includes a section on actual installations and various applications.

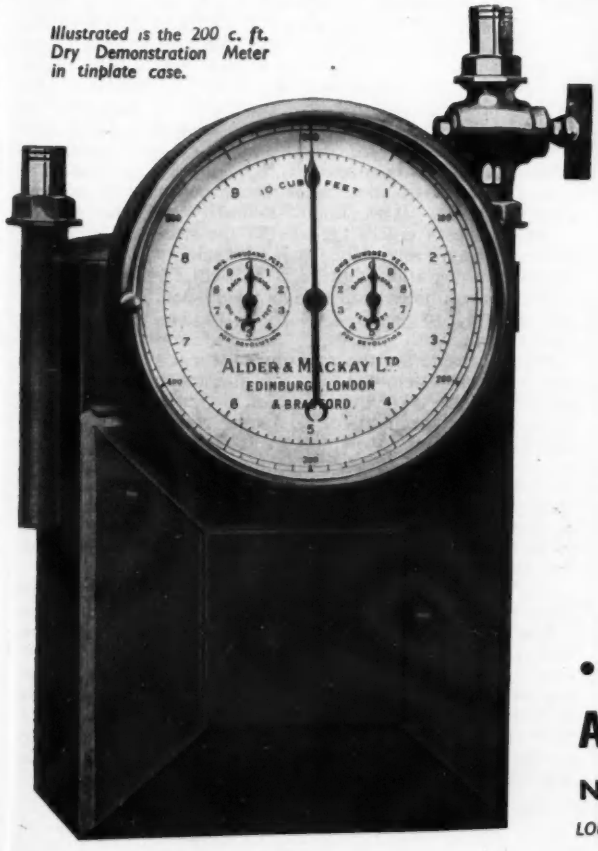
THOMAS RECORDING GAS CALORIMETER
PYROMETERS THERMOMETERS
AUTOMATIC TEMPERATURE REGULATORS
PRESSURE INDICATORS AND RECORDERS
INSTRUMENTS FOR GAS HOLDERS, ETC.

Free on request

Ask for LIST 154-D

CAMBRIDGE
INSTRUMENT CO. LTD.
13 GROSVENOR PLACE, LONDON, S.W.1
WORKS: LONDON & CAMBRIDGE

Illustrated is the 200 c. ft. Dry Demonstration Meter in tinplate case.



IMPORTANT MEASURES

The 'A & M' DRY DEMONSTRATION METER

This meter is particularly useful for cookery or other demonstration purposes. The dial is 9" in diameter, and the meter is available in a variety of sizes. Complete details will be sent on request.

ALDER & MACKAY LTD
Makers of Meters
New Grange Works, Edinburgh
LONDON · BRADFORD · MANCHESTER · BELFAST · CORK

AN EYE

to the future

Sales Managers

should be aware of all

the latest developments

in sales stimulants.

Lecturers

should be conversant

with what is new in the

field of visual aids.

Both

can derive the

greatest possible benefit

from the use of

Stereoscopic Colour Photography

which can be shown to the

individual prospective buyer

or *collectively* by *projection*.

Details from

WALTER KING PHOTOGRAPHY

11, Bolt Court, Fleet Street, E.C.4.

of the pipeline, the effectiveness of the external coating of the pipes, and the nature of the ground. It is almost impossible to estimate with any accuracy the cost of cathodic protection for any particular scheme until a survey has been carried out, but it is understood that an allowance of between 0.1% to 0.25% of the cost of the mains will adequately cover the annual cost of protection.

Volumetric Governors

Comment has previously been made on the economic advantage obtained by ensuring that an integrated system is as constantly loaded as possible, and it will be appreciated that some means of controlling flows into holder stations is required if peak loads on bulk supply mains are to be avoided.

Given the opportunity, holder station attendants usually ensure that the holders under their control are kept as full as possible, whenever possible, for as long as possible. While this is perhaps commendable in itself it does not lead to constant load conditions in an integrated system. Also, it may be considered desirable to have only part-time attendance at a holder station, the attendant in this case possibly being a district gas fitter who spends the major portion of his time on installation work and only makes infrequent visits to the holder station for routine checks on the equipment.

To deal with such conditions the high-pressure volumetric governor has been developed which maintains a constant flow at its outlet irrespective of fluctuations of inlet pressure. Pressure losses through this type of governor and orifice plate are considerable and may amount to 1 lb. per sq. in.

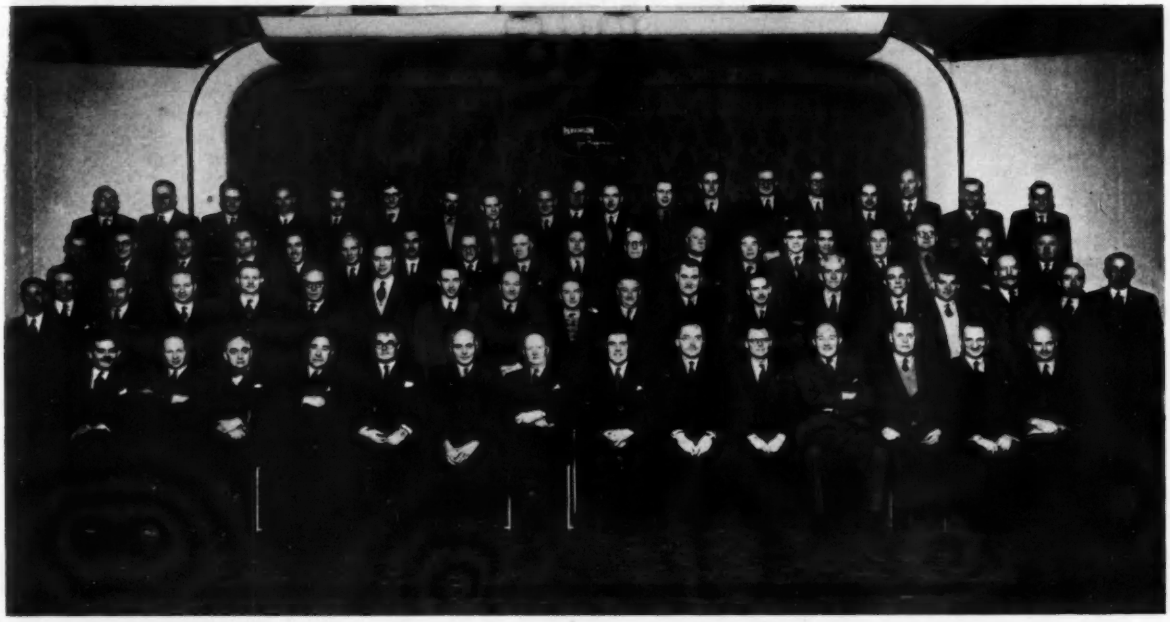
With the increase in the number of linkage schemes and the consequent centralisation of gas production has come the realisation that there are advantages to be gained from controlling integrated systems from a central point. If a responsible person at a central control point is in possession of accurate information of holder stocks, pressures, flows, and valve positions at holder stations in a system, and is able remotely to operate the valves, adjust flows through volumetric governors, and start and stop boosters, then it is possible to ensure that the supply mains and pumping plant are operated at as near 100% load factor as possible. The many facilities offered by modern remote indication and control equipment can, however, be accepted too eagerly. It should be remembered that it is sometimes possible to operate an integrated system as efficiently and as economically by telephone communication and manned stations as by a complicated remote control system. It is difficult to justify elaborate remote control systems unless they avoid the necessity of maintaining constant attendance at holder stations, or unless the proposed integration scheme is particularly complex. In short, the equipment must have a very definite and essential function to perform if it is to be an economic proposition.

When considering the economics of a remote indication and control system the cost of interconnecting or pilot wires must be taken into account. Generally, a pair of wires of the type used for telephone communication purposes is required to connect each remote station to the control point. If these are rented from the Post Office, then the annual cost per mile, including maintenance, will range from approximately £10 up to £12 12s., depending on the length required. However, when excavations are to be carried out for a bulk supply main, it may be desirable to lay a cable in the same trench.

The relative economics of laying suitable cable at the same time as a bulk supply main as against hiring Post Office lines are at present being investigated in connection with an integration scheme within the Cambridge Division. Although all the information is not yet available, it appears that where the layout of an integrated system is such that a suitable multi-core cable can take the place of three or more pairs of hired lines connecting remote stations to a control point, then the underground cable will be more economical.

MIDLAND JUNIORS VISIT PARKINSONS

About 90 members of the Midland Junior Gas Association visited the works of the Parkinson Stove Co. at Stechford, Birmingham, and also the Monitor Engineering works, on January 28. The party assembled in the works social club, where a photograph was taken. The social club is one of the finest in the county and, as the Chairman of the Company said, it is the envy of many of the large manufacturers in the neighbourhood. But the social club would not be such a success unless there was co-operation, understanding, and friendliness between management, staff and workers. The first impression the visitor gets is that such a bond exists and as the visitor goes from department to department that first impression is confirmed and strengthened.



Members of the Midland Junior Gas Association at the Stechford works of the Parkinson Stove Co., Ltd. In the centre of the front row Mr. R. J. Rogers, Chairman of the Company, is sitting next to Mr. J. A. Tomes, President of the Association.

In parties of seven the juniors were taken round the factory. Stepping briskly over the conveyor belts in the foundry they saw nimble fingered ladies doing wonderful things with sand in the core shop. At a later stage more young ladies were to be seen with seeming nonchalance, spraying cooker parts. The visitors were introduced to the man who puts 'Parkinson' on the cooker. Through the various departments they went until finally coming to the assembly shop they saw cookers and fires being assembled. Sink heaters are now being manufactured at Stechford and the visitors saw the first of these coming along the production line. In the Monitor works they saw the new Monitrol automatic shut-off valve. It is an American device for incorporation into the main gas supply. If the pilot burner goes out through failure of main gas, draughts, or blockage, within a short time the valve will shut and remain shut until the device is manually reset and the pilot re-ignited.

After the tour the juniors were entertained to tea and presented with brochures illustrating the Company's products and were also given a novelty propelling pencil as a souvenir of the occasion (inside each pencil was a set of poker dice). Mr. Renton 'showed' the Parkinson Renown Five cooker. In crisp sentences he extolled its virtues and gave many reasons why every housewife should have one. (A housewife faces heavy odds, in more ways than one, if she faces Mr. Jock Renton.)

In welcoming his guests Mr. R. J. Rogers, Chairman, said he had very much enjoyed their visit and it had been a great pleasure to show them the factory. The Company modestly claimed that it was a modern and well-equipped works and that in recent years many improvements had been made. As Chairman of the Company he had not borne the brunt of the work entailed in the planning of the visit. That had been borne by Mr. Jack Anstey and staff. Mr. Rogers next called on various members of the Company and, asking them to rise, introduced them to the visitors. Continuing, Mr. Rogers said that as an old member of the Association it gave him added pleasure to welcome them and it had also given him an opportunity of meeting old friends and making new ones. He was pleased to welcome Mr. Cureton and Mr. Rimmer, of the West Midlands Gas Board.

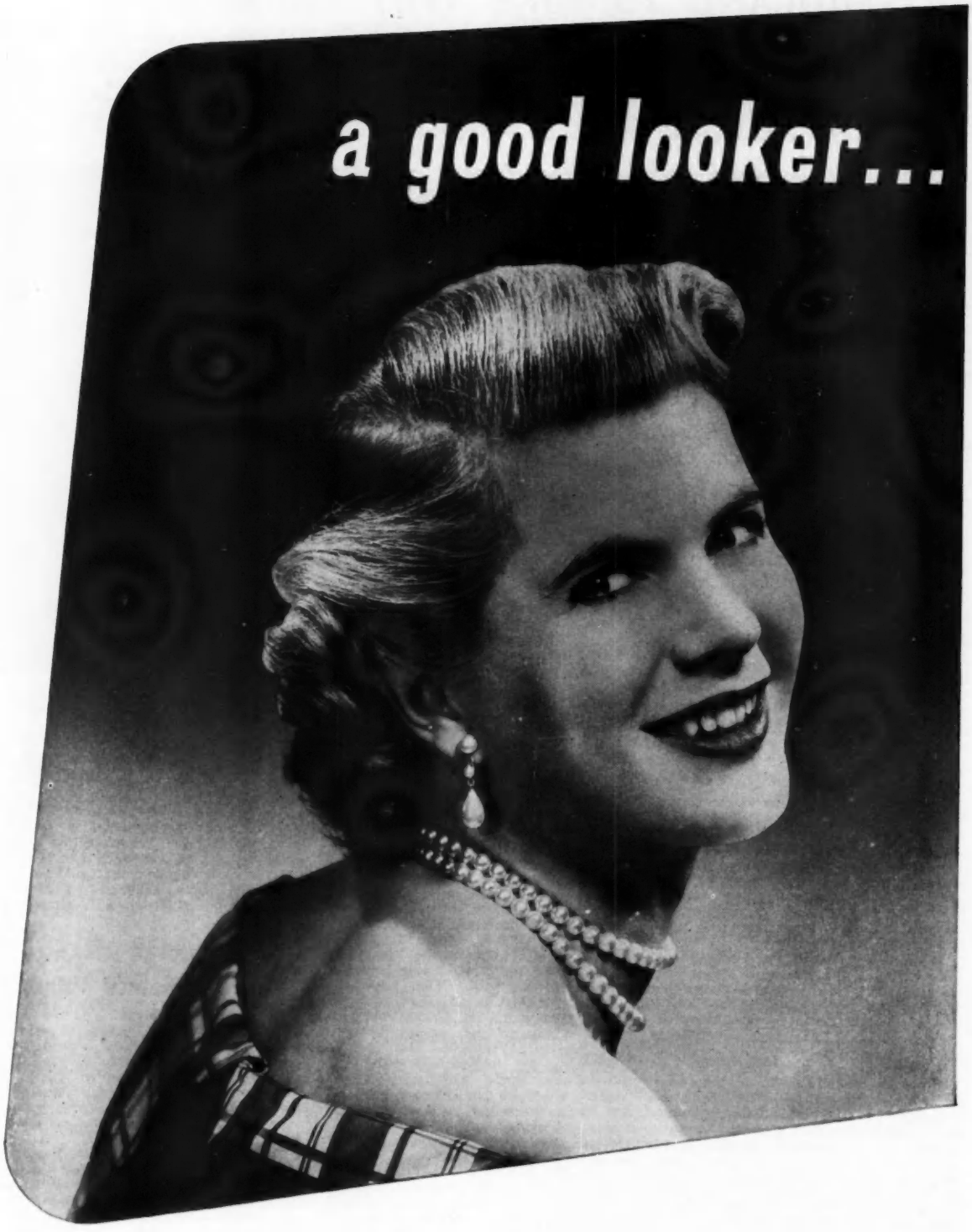
Mr. J. A. Tomes, President, replying on behalf of the Association, thanked Mr. Rogers for the hospitality. He congratulated the Company on the lay-out of the factory and on its efficient production methods. He was particularly interested in the Renown Five cooker and congratulated Mr. Renton on his demonstration. He said that he had been delving into the records of the Association, of which Mr. Rogers was an Honorary Member. In 1906 Mr. Rogers had presented a paper to the Midland Juniors and he was President of the Association in 1911. In his Presidential Address Mr. Rogers had made many points and suggestions and these Mr. Tomes enumerated. Mr. Tomes added that many of these had come to pass and some were still being discussed. That either indicated Mr. Rogers was exceedingly far sighted or the gas industry was slow to act. Prior to joining the Parkinson Stove Co. Mr. Rogers had been with the old Birmingham Gas Department and altogether had served the industry 53 years. Concluding, Mr. Tomes thanked Mr. Anstey, the guides, and others who had contributed to a successful and thoroughly enjoyable afternoon.

North Thames Films

During 1953, North Thames Gas Board gave 731 film shows to educational, social and welfare organisations within their area of supply, with a combined audience of just under 70,000. A record week was that ended December 21, when 54 separate shows were put on with 9,000 people viewing the gas industry films.

A graph kept by the Board's Facilities Section, which organises these shows, shows interesting trends in the social habits of the public. The winter months, with their darker evenings, are the most popular for film shows. As the lighter evenings come along, demand for these shows drops and then as clubs and societies begin to plan their autumn programmes, the graph begins to rise.

A peak in the 1953 graph was that for the Coronation period when the Board was inundated with requests for film shows to be given at Coronation parties.


a good looker...

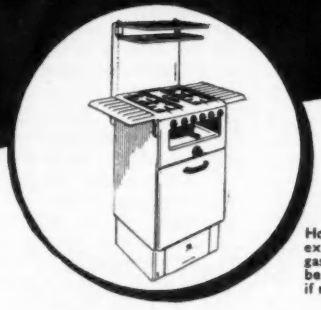
and a fine cooker

No. 20

CENTURY
GAS COOKER

Vitreous enamelled surfaces throughout — exterior finished in cream · four dual-purpose hotplate burners—for fast-boiling or simmering · large griller · hotplate fittings easily removed for cleaning · hotplate-well free from dirt traps · safety-type gas taps · double-shelf plate-rack · roomy oven giving high-quality cooking performance with minimum gas consumption · Mainstat oven-heat control · flash tube lighting to oven burner · drop-type door · used oven heat vented in front of back-plate · storage space in plinth base

The Century combines efficient performance with ease of cleaning



Hotplate side extensions and gas pistol can be supplied if required

NOTE THE NAME—MADE BY MAIN

R. & A. Main Ltd · London and Falkirk

IN PARLIAMENT

'Revolutionary Proposal'

The Labour Member for Loughborough, Mr. M. Follick, held sway at Question Time on February 1, and after half-an-hour Mr. Speaker adjourned the House without Question being put, the time being nineteen minutes to eleven o'clock. Mr. Follick has had a busy time. He has had lengthy correspondence with the chairmen of four of Great Britain's giant industries. He has been helped by the American Embassy and by headmasters of schools in his aim to find a solution to the problem of attracting and training more science teachers and more scientists for industry.

As a result of his diligent investigation he came to the 'revolutionary suggestion' that Loughborough College should be taken over and become an ancillary of British industry. 'Hon. Members, he said, may ask why I specify Loughborough College.' And well they might! He added: 'I do so, not because I have the honour to represent Loughborough, but because this College is recognised as the principal engineering and technical college in the Commonwealth.' We will leave it to others to argue this point.

Mr. Follick wants British industry to go in to a large extent to finance Loughborough College. In the course of his lengthy speech he commented: 'The one person whom I should have thought would have objected to this idea is the President of the College. But no; on the contrary, he comes out wholeheartedly in favour of it.' Much to Mr. Follick's surprise the President wrote to him in favour of the plan. And this, in part, is what he wrote:

'Your suggestion does mark a break from our traditional method of providing technical education, and I think that there is a need for breaking from this tradition. The national colleges set up in about six branches inside technical colleges have done a little in the way you talk of going, but progress is very slow indeed. I feel that our method at Loughborough, of gaining the confidence and thence the collaboration of industry, will produce results, but only slowly, and I constantly wonder whether the country can afford this slow development. I am, therefore, in favour of your suggestion, though I realise that a great deal of effort and determination will be necessary to put it into effect.'

'What would be the result of this?' Mr. Follick asked. 'The result would be that Loughborough College would be there as an ancillary to British industry, producing the scientists, the physicists, and the mathematicians which British industry requires, leaving the universities and training colleges to provide the teachers in schools and colleges. Therefore, one would get a flow from the schools to the universities on the one hand, and the flow from Loughborough College to industry on the other.'

The Parliamentary Secretary to the Ministry of Education (Mr. Kenneth Pickthorn) remarked: 'The Hon. Gentleman is not only making a speech, but he is preventing me from making one.' And it was at this juncture that Mr. Speaker intervened.

Electricity in Scotland

Mr. James Stuart, Secretary of State for Scotland, moved the second reading of the Electricity Reorganisation (Scotland) Bill. He explained that its object was to make the Secretary of State the responsible Minister for electricity matters in Scotland and to set up a new board answerable to him for the generation and distribution of electricity in the south of Scotland, in the same way as the Hydro-Electric Board was responsible in the north. It was a further step in the policy of restoring to Scotland the management and control of her own affairs in this direction, and was a measure of decentralisation.

The North of Scotland Board would no longer have to seek the approval of the British Electricity Authority for the constructional schemes which they wished to promote, and the new South of Scotland Board would take the place of the British Electricity Authority as the body required to purchase at a guaranteed price the surplus electricity produced from the water power resources of the north.

The Government, said Mr. H. McNeil (Greenock, Lab.), had introduced a sham Bill. At best it was a back-door attack on an efficient piece of nationalisation. At worst it was a piece of political humbug.

In spite of this and sundry other sallies the motion for the second reading was carried by a majority of 30.

Coke Control Ended

All restrictions on the buying of domestic coke were lifted as from yesterday, February 9. Announcing this in the House of Commons on Monday, Mr. Geoffrey Lloyd, Minister of Fuel and Power, said that in future the public can buy as much coke as they like, from any retailer. He had been carefully watching how coke supplies had taken the strain of the winter demand, including the cold spell, and he had decided that the right course now was to abolish the restrictions on coke supplies at once.

During the recent cold spell undistributed stocks of coal at collieries were 1,100,000 tons. Merchants' coal stocks were high for the end of January, at 1,446,000 tons, and coke stocks at gasworks and coke ovens were at the record level of 1,800,000 tons.

Answering questions about delays in deliveries, Mr. Lloyd said that on the second day of the cold spell about half the domestic customers in the United Kingdom placed orders with their merchants, and although stocks were good there was difficulty in making deliveries to all people at the same time.

Total distributed stocks of coal on January 23 were 16,700,000 tons, compared with 7 mill. on the same day in 1947. Stocks of coal held by power stations on the same dates were 5,400,000 and 1,300,000 tons.

During the cold spell, the Minister said, there had been record demands for electricity and gas all over the country. It had been necessary sometimes to reduce voltage or pressure, but there had been only one small and short power cut, which occurred as the system was taking up the steep rise in the load on January 25.

The maximum permitted quantity of boiler fuel, including coke, for the year 1953-54 was originally fixed at three tons, of which 30 cwt. could be taken in each half year. It was raised to 3½ tons on November 1, but the restriction on anthracite was unchanged. Anthracite is restricted to one ton, and this will not be altered by the new direction. The restriction of the quantity of coke obtainable was removed in January, 1950, but was restored in August, 1951.

An official of the North Thames Gas Board said that at the moment there would be a relay of up to three weeks in delivering orders placed with the Board.

Industrial Expansion at Larne

Possible changes in public services following the setting up of the British Thomson-Houston Company's factories in Larne were reviewed in a report to the Borough Council on February 1 by the Industrial Development Sub-Committee. The gas requirements of British Thomson-Houston would be at the rate of 10,000 cu.ft. per hour for normal purposes, and 40,000 cu.ft. per hour if gas was used for heat treatment. The Larne Gas Company had not the plant capable of meeting that demand.

The Mayor, Alderman C. Ross, M.B.E., said he understood the Gas Company was investigating the matter, and a member suggested that the Borough Council should consider taking over the Gas Company.

Councillor McK. Rea asked if there was any possibility of the Council establishing a gasworks to supply the newly developed areas of the town, leaving the Gas Company to continue supplying its present area.

Notable Family Records

Sixty-four employees of the North Thames Gas Board, who had each served 40 years, received long-service presentations at the Board's offices at Vincent Street, Westminster, at the hands of Mr. F. M. Birks, C.B.E., Deputy Chairman. During 1953, no fewer than 225 employees qualified for such awards, with an aggregate of 9,000 years of service.

Mr. Birks thanked the men for their loyal service, and paid tribute to the work, behind the scenes, of the men's wives, who were also present at the ceremony. He also referred to the family tradition of service in the gas industry, pointing out that a large proportion of those receiving awards had fathers, grandfathers, and other relatives who had worked in the industry.

One of the recipients that day claimed no fewer than 600 years' combined family service with the Board. He was Mr. Albert S. Emerson, time clerk at the Brentford works, whose father was one of five brothers all of whom had worked in the gas industry. Of the 17 Emersons who have worked for the Board, four are still there.

Another recipient whose family has been in the gas industry for at least three generations was Mr. George Littleton, works officer at Maidenhead. His gandfather was Manager at Maidenhead 1880-1920, his uncle held the same position from 1920-1945, and another uncle and a cousin were Managers at Marlow between 1910 and 1949.

Works officer at Southend, Mr. Wilfred Shadbolt also received an award. His father was General Manager of the old Grays Gas Company for 25 years before retiring. Mr. Milner, a clerk in the Board's Headquarters Division at Westminster, also received an award. His grandfather owned the Storrington gasworks in Sussex round about 1860.

'Scols' Golden Jubilee

Major, Robinson & Co., Ltd., makers of the 'Scols' pipe and tube bending machines and range of metallic cements, celebrate their Golden Jubilee during 1954. In 1904, oxy-acetylene repair work was the principal activity of the firm, then known as Jas. Major & Co., Ltd. Later, iron cement was produced and this was followed by the production of 'Scols' tube bending machines of patent design. The Company's present title was adopted in 1911, and in 1948, when a change of control was brought into operation, the firm moved into its present premises at Warwick Road South, Manchester, 16. The most recent extension of activities has been the opening of a London office, at Evelyn House, 62, Oxford Street, W.1.

A Long Family Association with the Stratford works of the North Thames Gas Board ended recently with the retirement of Mr. Fred Crook, foreman bricklayer, after 48 years' service. Mr. Crook is one of the last links with the old West Ham Gas Company, and his grandfather, father, uncle, and brother have all worked at Stratford, the total family service being 235 years. Mr. Crook was presented with a farewell gift of an oak barometer, and Mrs. Crook also received a commemorative presentation.

Conference on Complete Gasification

An International Conference on Complete Gasification of Mined Coal will be held at Liège on May 3-8 under the organisation of the Institut National de l'Industrie Charbonnière. The meetings will be followed by visits to the principal gasification plants of Western Europe. During the conference there will be discussions in French, English, and German, with simultaneous interpreting.

Particulars of the conference (at which five contributions will be made by delegates from Great Britain) and application forms for membership can be obtained from M. J. Venter, Le Directeur, Institut National de l'Industrie Charbonnière, 7, Bd. Frère Orban, Liège, Belgium.

Welfare Services

The Institute of Municipal Treasurers and Accountants and the Society of County Treasurers have published their *Welfare Services Statistics, 1952-53*. The booklet contains statistics relating to the services provided by the responsible local authorities in England and Wales under the National Assistance Acts. The return shows for each authority the total expenditure on the services met from rates, and the corresponding rate in the pound, together with an analysis of net expenditure and government grants, expressed as amounts per 1,000 population. This analysis includes residential homes, temporary accommodation and special welfare services—*e.g.*, services for blind persons.

Another section shows the costs per resident per week of running each of four sizes of residential homes, with the costs analysed over various kinds of expenditure. Figures are given of the number of persons accommodated and these are also expressed as numbers per 1,000 population to give a measure of the relative burden in the various areas. Copies of the booklet may be obtained from 1, Buckingham Place, S.W.1, price 3s. each post free, or 15s. for six copies, with reductions for larger orders.

Priority for New Houses

Following investigations into the delay in completing new houses in the borough, Gateshead Town Council has absolved the electricity, gas, and water undertakings from blame. It had been alleged earlier that the handing over of new houses had been held up because of the delay in installing gas, electricity, and water, but the Council has decided that these undertakings were in no way to blame, and that the reports of the Borough Engineer (Mr. G. F. Winters) on the delays were erroneous.

The Council has decided that the administration within the Borough Engineer's Department and the outside site organisation was not satisfactory. The Borough Engineer has been asked to submit a weekly report on housing progress to the Chairman of the Estates and Housing Committee.

Both the gas and electricity boards said they operated a system of priority whereby labour was moved from one site to another to ensure that services were installed when required and no delays occurred.

Coke Sales Abroad

In a review of post-war coke exports, the January issue of *Focus*, the economic bulletin of the North Western Gas Board, suggests that fear of renewed coal shortage in Britain among foreign buyers is the main obstacle to steady expansion of coke sales abroad. Without freedom to adjust the price of coke, producers have no means of guarding against a sudden fall in stocks due to coal shortage, and the survey concludes that 'whatever else may have been achieved by the policy of controlled coke prices and allocation of supplies in the home market, exports have certainly not been furthered by it.' The suggestion is also made that even within the existing controlled price structure export prospects could be substantially improved by allowing foreign buyers to choose for themselves how much they will take from each of the available sources of supply in Britain.

Figures included in *Focus* show that gas coke exports from the United Kingdom increased from 630,000 tons in 1948 to 850,000 tons in 1950, but were then sharply curtailed, to only 150,000 tons in 1951, owing to coal shortage in Britain. Shipments in 1952-53 at 566,000 tons were still short of the 1950 level and amounted to about half of the pre-war tonnage.

Shipments from the North Western area also fell sharply from 174,000 tons in 1950 to 27,000 tons in 1951-52, and exports in 1953, at 112,000 tons, were still only two-thirds of the 1950 tonnage. Part of the fall in exports has been due to the general reduction in consumption of solid fuel and rapid increase in the use of fuel oil and hydro-electricity. But to a large extent British coke has been displaced by coke shipped from Germany, which accounted in 1952 for about half of the coke supplied to Denmark, Norway and Finland, compared with about one-fifth in 1937. Figures for the first half of 1953 indicate that there has been some improvement in the relative position of British exports, particularly in sales to Denmark, but the total quantity of coke imported from all sources shows a further fall from the 1952 figure, due very largely to the mild winter of 1952-53.

In the face of intense competition from other countries and from other fuels, in a market which is gradually contracting, British exports are handicapped by the uncertainty created among foreign consumers by the possibility of a recurrence of a coal shortage in this country. It would appear that whatever else may have been achieved by the policy of controlled prices and allocation of supplies in the home market, exports have certainly not been furthered by it. Even within the controlled price structure, freedom for foreign buyers to determine for themselves how much they will take from each of the available sources of supply would contribute substantially to the steady expansion of export sales.

In accordance with annual custom, the 153 pensioners from the products works of the North Thames Gas Board have each received a sum of money from welfare funds administered by a joint committee. The money is derived from sporting activities. These 'Christmas boxes' are intended as a reminder that their former colleagues on the works have not forgotten them.

GROWTH AT DUNFERMLINE

DUNFERMLINE Gasworks, which within the last year or two has been equipped with plant of the most modern type, is now the largest gas-producing unit in Fife. Immediately after the war, when the works belonged to the Corporation, it became apparent that the output demands on the undertaking were increasing to such an extent that existing plant was coming to the end of its effective life and would have to be renewed. The lay-out of the works was completely redesigned to permit of the installation of new carbonising plant, carburetted water gas plant, and ancillary plant, including a new exhauster and compressor house and a new electric power house.

Most of the planning was completed before gas nationalisation, and while modifications were made to the project when the Scottish Gas Board took over the works, the scheme of modernisation was largely that which had been planned by the Corporation.

Since 1947 output of gas has been increased by approximately 30%, and is approximately double the figure of pre-war days. Since the industry has passed into public control 18 miles of new trunk mains have been laid in the Dunfermline area. New retorts, along with a condenser, meters, and station governors, were installed in the works before nationalisation, but since then there has been installed new wet purification plant and dry purification plant.

When Dunfermline became the headquarters of the Fife Group of the Scottish Gas Board it was necessary to rebuild and redesign the office accommodation for the administrative staff. The present building consists of two storeys with a flat roof, but when the foundations were laid this work was planned so that, at some future date, a third storey might be added if necessary. The laboratory was also redesigned.

American Gas Sales

TOTAL gas sales of the American gas utility industry during November, 1953, were 4,644 mill. therms, a decline of 1.8% from the 4,729 mill. therms sold a year earlier. The drop in sales is attributed to the warm weather. There were 11% fewer degree days than for the comparable month a year earlier. Although industrial sales rose approximately 7.5%, they could not offset the lower house heating demand due to the warmer weather.

Natural Gas Trend

Natural gas sales aggregated 4,387 mill. therms, 1.7% less than the 4,462 mill. therms of November, 1952. Manufactured and mixed gas sales declined 3.7% from 267 mill. therms to 257 mill. therms. Mixed gas sales rose 8.2% to 198 mill. therms from 183 mill. therms. Manufactured gas sales decreased 29.9%. Changes in sales by type of gas reflect to a large extent conversions from the distribution of manufactured gas to natural and mixed gas.

Annual Statistics

Sales of the entire gas utility industry for the 12-month period ended November 30, 1953, were 56,065 mill. therms, representing an increase of 8% from the 51,916 mill. therms sold in a comparable period a year ago. Natural gas sales in the 12 months were 52,817 mill. therms, 8.7% more than the 48,579 mill. therms sold in the 12 months ending November 30, 1952. Manufactured and mixed gas sales declined 2.7% from 3,336 mill. therms to 3,247 mill. therms, although mixed gas sales rose 13.2% from 2,057 mill. therms to 2,328 mill. therms during the period.

The Atomic Age

SIR HUBERT HOULDSWORTH, Chairman of the National Coal Board, speaking at the second annual dinner of the Incorporated Plant Engineers in London on January 29, said the success of the fight for economic recovery was going to depend very largely on having the proper machinery to help in industry, and the people who knew how to use it and had sufficient originality to improve it. One of the country's greatest needs was the cultivation of technological education and the supply of an increasing number of technologists with ever-increasing ability. The need for efficiency was illustrated by the struggle to promote improvement in the utilisation of fuel. The demand for power would grow too big a strain on the nation's fuel resources unless the endeavour to increase the availability of fuel, coupled with increasing efficiency in its use, was successful.

Sir Charles Ellis, President of the British Coal Utilisation Research Association, said it had been suggested that atomic energy was going to replace coal, but he believed the burden of B.Th.U. was going to be taken for the next 100 years or so by coal. Atomic energy would raise the standard of 'B.Th.U.ism' because it was going to mean that everything in the form of utilisation had to measure itself against standards which would be supported by the most modern advances in research, the most modern applications of technology, and the expenditure of resources.

The plant engineer was the essential man who made a vital difference between running at a profit and running at a loss. He had learnt the importance of the plant engineer, the man who ran things, who had the mastery of all the techniques, but did not allow the techniques to master him.

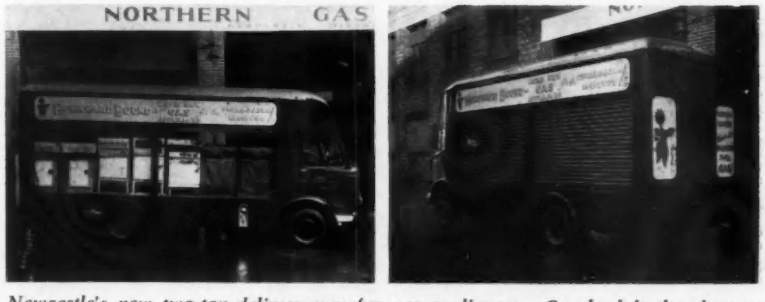
Sir John Cockcroft, Director of the Harwell Atomic Research Station, said that coal supplies might run out in 200 or 300 years, but there was plenty of nuclear fuel in the world. In the gold ores, in the phosphate rocks, and in the ocean there was lots of it if we could only learn to take it out, and that was the real problem. We must encourage our young technologists to develop their ideas and provide them with the facilities and finance to get on with the job.

Members of the Cardiff and Llanelly branches of the Women's Gas Federation had a pleasant get together at the Cardiff Gas Showrooms, St. John Square, Cardiff. Entertainment was provided by the Cardiff branch choir. Chief guests were the Lady Mayoress of Cardiff (Lady Collins) and the Mayoress of Llanelly (Mrs. J. Davies). Also present were Mrs. Daisy Lewis, Chairman of the Llanelly branch, Mrs. Eric Evans, Chairman of the Cardiff branch, together with the Hon. Secretary and Treasurer respectively of the Cardiff branch, Miss E. Rehbeim, and Mrs. C. Holt.

IMPROVING TRANSPORT OF APPLIANCES

With the aim of facilitating and improving the deliveries of major gas appliances to consumers' houses, the Newcastle Division of the Northern Gas Board has added a 'Karrier-Bantam,' two ton motor to its transport fleet. The low-loading designed chassis enables cookers, washers, refrigerators, etc., to be loaded and unloaded much more easily and each appliance is protected by a slip-on padded jacket together with safety strap to avoid any movement in transit.

Being entirely new on the road, the vehicle carries a new message in gold shaded in red: 'Homeward Bound—More new gas appliances for the discriminating Housewife.'



Newcastle's new two-ton delivery van for gas appliances. On the left the shutters are seen open, and on the right the vehicle is closed and ready for the road.

When loaded, access to a particular appliance is reasonably simple by the slipping up of the roller-shutter and the removal of the appliance from the side, rather than sorting and taking it out from, say, the centre of an ordinary type of platform lorry usually used for such deliveries.

A complete load consists of 14 major appliances, placed seven on each side, plus a centre aisle of sufficient width to take gas fires, water heaters, etc. Above the cargo space is fitted a series of racks to carry the necessary lengths of piping and fittings required for completing each installation.

Balfour Lecocq, Ltd.

The recent successful introduction of the Balfour-Lecocq tower box purifier to the gas industry was one of the results of the friendly co-operation between Henry Balfour & Co., Ltd., and Les Fours Lecocq, S.A., of Brussels, a co-operation which has also been instrumental in installing spiral-guided gasholders on the Continent.

Arising from their previous successful experience of working together, the two companies have now extended this co-operation and have formed a new British company entitled Balfour Lecocq, Ltd., of which the share capital is held equally by the two parent companies.

The new Company, Balfour Lecocq, Ltd., will cover Great Britain, the Commonwealth, and British Territories overseas, and will be able to offer a wide range of by-product and specialised plant concentrating on the coke oven industry.

Since the war, Les Fours Lecocq, S.A., has installed an imposing number of modern coke oven installations on the Continent, and the firm's designs and experience will be available through Balfour Lecocq, Ltd., who can thus produce plant of the latest Continental design, made in this country and backed by British service and workmanship.

The Board of Directors consists of five from each parent Company, including the respective chairmen—Mr. W. Lindsay Burns, of Henry Balfour & Co., Ltd., and Mr. R. Fourmanoit, of Les Fours Lecocq, S.A. The other Directors for Balfours will be Messrs. Lindsay Burns, Jr., I. M. O. Hutchison, R. C. Thomson, and A. C. Bureau; and for Lecocq, Colonel Milner H. Board, O.B.E., T.D., and MM. J. R. Fourmanoit, J. L. de Sagher, and A. J. Vilain. The General Manager of Balfour, Lecocq, Ltd., will be Mr. A. C. Bureau.

The Company will share for the start the offices of Henry Balfour & Co., Ltd., Durie Foundry, Leven, Fife.

Coleraine Gas Price

Coleraine Borough Council has referred to the Gas Committee for consideration a motion by Alderman J. D. Murphy advocating a reduction in the price of gas. The present rate is 8s. 4d. per 1,000 cu.ft. for slot meters and 7s. 11d. per 1,000 cu.ft. to ordinary consumers.

Alderman Murphy said during the past year the price of gas had been raised twice. The cost of living was rising in all directions and wages were not able to keep up with it. He proposed a reduction of 10d. per 1,000 cu.ft.

The Gas Manager, Mr. W. R. Armstrong, said that he had reported recently to the Council that there were only three works in Northern Ireland—Belfast, Ballymena and Bangor—which had cheaper gas than Coleraine. Basic working expenses, including the higher cost of coal, had increased by £3,300 in the Coleraine works during the past 19 or 20 months.

The Council adopted a report from the Gas Committee recommending that a supply of gas be provided for the new flats on the Northern Ireland Housing Trust estate at Hazelbank.

The Gas Manager stated that the wage increases recently awarded by the National Joint Industrial Council for the Gas Industry would cost the Gas Department approximately £310 per annum. An increase of 12s. per week was also granted to the two gas meter readers in the employment of the Council.

The Council also decided to hold a special meeting to consider the question of public lighting after the Town Clerk and the Gas Manager had had compiled necessary information on the subject.

Paint Exhibition

The sixth Technical Trade Exhibition of the Oil and Colour Chemists' Association will be held at the Royal Horticultural Society's Old Hall, Vincent Square, London, S.W.1, on April 21 (3 p.m. to 8.30 p.m.), April 22 (2 p.m. to 8.30 p.m.), and April 23 (2 p.m. to 7.30 p.m.). The entire Exhibition will be housed in one Hall.

An exhibition luncheon will take place, as in former years, at the Criterion Restaurant, Piccadilly, on April 21, and tickets (21s.) for this function are restricted to members of the Association and to two per exhibitor. Applications for these tickets and for copies of the exhibition brochure, which is now in the final stages of preparation, should be made to the General Secretary, Oil and Colour Chemists' Association, Memorial Hall, Farringdon Street, London, E.C.4 (Tel.: CENtral 2120).

Flame

Another Juvenile Lecture was presented recently, this time at Inverness by the Scottish Association of Gas Managers. The lecturer was Mr. Frank Brinsley, whose lecture entitled 'Flame' was delivered to an audience comprising mainly senior pupils of the Royal Academy and the Technical High School.

Mr. Brinsley was introduced by Mr. John Ford, Manager of the Inverness District of the Scottish Gas Board, and Senior Vice-President of the Scottish Association of Gas Managers.

As is usual at these lectures, the remarks were strongly supported with demonstrations, but Mr. Brinsley opened with a historical outline of man's attitude to flame or fire. He referred to the impression made by fire upon the mind of early man, shown by its prominence in the mythologies of all the great races, the many references in the Bible, and the symbolic uses in the ancient world and today, such as the Olympic Flame and the Perpetual Flame of Toc H.

At the conclusion, Mr. Johnston, of the Technical High School, proposed a vote of thanks and congratulated the Scottish Association of Gas Managers on its service to the community.

Members of the London Division of the National Benzole Co., Ltd., held their annual ladies' night at the Hotel Rubens, Buckingham Palace Road, on January 28. Among the guests who were received by the Divisional Manager, Mr. W. L. Roney and Mrs. Roney, were Mr. H. H. Bates, Managing Director, and Mrs. Bates, Mr. C. G. Brook, General Manager, and Mrs. Brook, Mr. L. Halsey, Sales Manager, and Mrs. Halsey. The toast of the Company was proposed by Mr. H. G. Cook, Assistant Manager of London Division, who traced the history of the Company from its beginnings in 1919 in one room in Horseferry Road to its present position. The Managing Director replied. The health of the ladies was proposed by Mr. W. L. Roney, and Mrs. R. E. Boness, wife of the Kensington representative, responded.

Boiler Fuels Dearer

In consequence of the heavy and increasing demands both at home and abroad the prices of anthracite coals and Group 2 boiler fuels, including Phurnacite produced in South Wales, were increased from last Monday.

Increases in the price of coke, from Monday, in London and Southern England were also announced. The increases per ton are: London area, by 4d. to £6 0s. 2d.; Eastern and South Eastern Gas Boards areas (outside London), by 1s. 4d. for urban deliveries and 10d. in rural areas; Southern and South Western Boards areas, by 1s. 4d.

How They Waste Gas

In his address to the annual general meeting of the Bradford branch of the Women's Gas Federation, Mr. C. A. Newham, Bradford Group General Manager, told how saving could be effected by eliminating wastage in the use of gas and by the judicious manipulation of gas appliances.

He referred to people who, when boiling water, turned on the gas at full before even filling the kettle; and, when the water reached the boil, had to search frantically for the tea-pot and measure out the tea. After pouring the water into the pot they would finally pay attention to the gas ring, which was invariably burning at full. A pint of water could be boiled in five minutes at a cost of 400 units of gas. But by adopting a careless procedure, together with other faults such as boiling an unnecessary amount of water and using a narrow bottomed kettle, as much as 1,200 units could be used. By boiling water in such a manner three times a day as many as 2,400 units daily could be lost. Over a year this represented a wastage of 876,000 units.

New officers elected were: Mrs. C. A. Newham, Hon. President; Mrs. F. Pickles, Chairman; Miss S. M. McCreadie, Secretary; and Mrs. A. Jackson, Treasurer.

Local Shilling Shortage

Brecon and Radnor Divisional Committee of the Wales Gas Consultative Council has been promised by Mr. F. Dupont, Engineer and Manager at Brecon and Chairman of the Brecon and Radnor Group Committee, that the Board will investigate a complaint relating to a statement that there is a shortage of shillings in the district. At the meeting of the Committee, Mr. R. E. Davies alluded to the shortage of shillings and said he was thinking of young people starting married life, who might have less money than other people. The shortage was causing difficulties during cooking, when penny meters might see the job done.

The Chairman, Mr. J. W. Morgan, said if the Committee thought the dual purpose meter should be installed in the interests of the consumer it should make the recommendation. The Board could turn it down on financial grounds, if it thought fit.

Mr. Kinsley Morgan: 'Out of kindness to these young people I move no action. We are becoming more and more spoonfed every day.'-

When it was asserted that if people were not satisfied with the treatment they got from the Gas Board, they would turn to electricity, a member said: 'And they will still want shillings for electricity meters.'

WALTER KING SERVICES

PERIODICALS . . .

GAS JOURNAL. *(Weekly.* Wednesday, By Post, **1s. 5d.)**

The "Gas Journal" has existed as an integral part of the Gas Industry since 1849. Unbiased policy, technical knowledge, accuracy and reliability combine with an extensive news service and modern make-up to make the Journal the leading Gas Industry newspaper.

Annual Subscription (including a copy of the "Gas Journal" Calendar and Directory): Home and Empire, **52s.** ; Foreign, **60s.**

GAS SERVICE. *(Monthly.* By Post, **1s. 2d.)**

"Gas Service" is the specialist magazine for the Sales and Service personnel of the Industry. It covers all aspects of gas service from the holder to the burner. In addition to sound editorials, news items and specially contributed articles, "Gas Service" also reports in the fullest possible manner the activities of the numerous Salesmen's Circles.

Annual Subscription: Home and Empire, **12s.** ; Foreign, **15s.**

BOOKS and ANNUALS . . .

Some current works covering the manufacture, distribution, and sale of gas are :—

KING'S MANUAL OF GAS MANUFACTURE. Now being issued in 10 self-contained sections. Sections available and prices on application.

MANUAL OF GAS FITTING. By R. N. Le Fevre. **30s.**

GAS DISTRIBUTION ENGINEERING. By R. N. Le Fevre **22s. 6d.**

DOMESTIC UTILIZATION OF GAS. By Smith & Le Fevre **20s.**

High Pressure Gas Main Construction (Restall), **10s. 6d.**

ANNUALS:—

"Gas Journal" Calendar and Directory, 25s. ; "Gas Service" Pocket Book (1954 Edition) **5s.**

BINDING . . .

In addition to permanently binding subscribers' journals, (particulars and prices for which we shall be pleased to give on application) we can supply TEMPORARY BINDERS for the Gas Journal, Gas Service and King's Manual of Gas Manufacture, thus enabling readers to *bind their copies as received.* The danger of mislaid or damaged copies is eliminated.

Gas Journal temporary binder }
Gas Service " } . . . . **13s. 3d.** each inc. postage.
King's Manual " . . . . . **9s. 9d.** each inc. postage.

PHOTOGRAPHY . . .

Walter King Photographs specialize in Gas Industry photography of every description—work in progress series, plant, appliances, showroom displays, exhibition stands, social and educational visits of all kinds. Tours for various areas of the country can be arranged. First class photography at competitive rates. Full particulars on application.

WALTER KING LTD., 11 BOLT COURT, FLEET STREET, LONDON, E.C.4

Central 2236-7.

PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire:—52/- per annum; Foreign:—60/- per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words)—minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep × 7" wide: block screen 120.

BUSINESS MANAGER : S. T. CULLEN

MIDLANDS MANAGER: G. B. Torrance, 42, Wychall Lane, King's Norton, Birmingham, 30.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. *'Phone:* Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. *Telegrams:* Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF
IRON
Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.
Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED
ESTABLISHED 1873

PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

FIRE!
WHICH COLOUR
NU-SWIFT?

Red, blue or black ? Distinctive colours for different fire risks prevent costly errors. Are your extinguishers the right colours ? Write, or phone Elland 2852, for free advice.

NU-SWIFT LTD. · ELLAND · YORKS
In Every Ship of the Royal Navy

"KLEENOFF" *
THE COOKER CLEANER

"KLEENOFF"
FIBRE BRUSHES
RUBBER MOPS

"KAY-DEE" *
KETTLE DESCALER

For resale to the public, and in bulk for Works use.

BALE & CHURCH, LTD.
7, CROMPTON WAY, CRAWLEY, SUSSEX

PRESSURE VESSELS
FOR THE GAS AND CHEMICAL INDUSTRIES
Welding in all Metals (Gas or Electric)
Welding Repairs

RICHMOND WELDING CO.
Richmond Road, BRADFORD
Tel. : BRADFORD 25405

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

CALOR GAS (DISTRIBUTING) CO., LTD. require suitably qualified person for services as LECTURER with a mobile training unit. Applicants should preferably reside in the home counties, have experience in teaching (such as part-time evening school). Qualifications should include recognised gas certificate. The appointment involves regular travelling in the United Kingdom and is probably more suitable for an unmarried man, but married applicants will be considered. Prior training will be given. The appointment is pensionable (non-contributory) after suitable qualifying period. Commencing salary from £550-£600 per annum, according to experience and qualifications. Reply in first instance, giving full details of age, marital status, qualifications and experience to The Chief Engineer, Research and Development Division, Coombelands, Addlestone, Surrey. Marking envelope " Lecturer," before March 31, 1954.

SCOTTISH GAS BOARD
SOUTH EAST DIVISION

APPLICATIONS are invited for the post of TECHNICAL ASSISTANT. Candidates must have a good all round experience in the control and operation of carbonising and ancillary plant, particularly Continuous Vertical Retorts, and be capable of obtaining maximum efficiency of operation of the various plants at the different districts in the divisional area. Experience with plants on small works would be an additional advantage.

The salary will be within the range of Provincial 'A' Grades (A.P.T. VII-IX (£585-£715 per annum) with placing according to qualifications and experience.

Candidates should possess the Higher Grade Certificate of the Institution of Gas Engineers (Manufacture) or an equivalent qualification. The successful applicant will be required to undergo medical examination and join the Superannuation Scheme.

Applications, addressed to the undersigned, to be received not later than Friday, February 26, 1954.

D. J. COLVIN,
Divisional Controller.
25, Chester Street,
Edinburgh, 3.

SCOTTISH GAS BOARD
DUNDEE GROUP—
DUNDFE DISTRICT
TECHNICAL ASSISTANT (CONSTRUCTION)

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT (CONSTRUCTION) with the Dundee Undertaking of the Scottish Gas Board.

Applicants must have experience in the preparation of Specifications, Estimates, Layout of Works plans for development of works plant, Structural Development and Supervision of Erection of New Plant. They must be University Graduates or Corporate Members of an Engineering Institution.

The salary applicable to this post will be within Grades A.P.T. VII/VIII of the National Salary Scales (£545-£665 per annum) with placing according to experience and qualifications. Applications, stating age, training, experience and qualifications together with any Testimonials, should be lodged with the undersigned within fourteen days of the appearance of this advertisement.

W. S. JOHNSTON,
Group Manager.
Gas Works,
50, East Dock Street,
Dundee.

SCOTTISH GAS BOARD
KILMARNOCK GROUP

APPLICATIONS are invited for the position of GROUP TECHNICAL ASSISTANT for the Kilmarnock Group.

The salary will be within the scales A.P.T. VII-IX, Provincial 'A' with placing according to qualifications and experience. The present scales, including the latest cost of living increase, are £565-£735.

Applicants should possess the Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers, or an equivalent qualification, and should be experienced in the operation of vertical and horizontal retorts and water gas plants.

The post is superannuable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to the undersigned within fourteen days from the appearance of this advertisement.

ROBERT FIFE
Group Manager.
Riverbank Gas Works,
Kilmarnock.

SCOTTISH GAS BOARD
WESTERN GROUP
GREENOCK & PORT GLASGOW DISTRICT
TECHNICAL ASSISTANT

APPLICATIONS are invited for the position of Technical Assistant at Greenock. The salary will be within the range of grades A.P.T. III-VI (£320-£590) of the National Joint Council for Gas Staffs, Provincial " A " Scale, with placing according to qualifications and experience.

Candidates should possess the Higher Grade Certificate of the Institution of Gas Engineers (Manufacture) or equivalent and have had experience in working of carbonising and ancillary plant.

The successful candidate will be required to pass a medical examination and become a member of the Board's Superannuation Scheme.

Applications, stating age, experience and qualifications, should be addressed to the subscriber within fourteen days of publication of this advertisement.

WILLIAM KIRK,
District Manager.
Inchgreen Gas Works,
Greenock.
February 2, 1954.

(Classified Advertisements continued on page 370)

APPOINTMENTS VACANT (ctd.)

EASTERN GAS BOARD

IPSWICH DIVISION

WORKS MANAGER—

CHELMSFORD DISTRICT

APPLICATIONS are invited for the position of WORKS MANAGER at the Chelmsford Works. Salary within the range of £850 to £900 per annum.

Candidates should be Associate Members of The Institution of Gas Engineers or possess an equivalent engineering qualification and should be capable of controlling the day-to-day operation of the Works which has a capacity of 4 mil. cu. ft. per day from Woodall-Duckham Continuous Vertical Retorts and Power-Gas C.W.G. plant and the usual ancillary plant.

The successful candidate may be required to pass a medical examination and to join the Board's Staff Superannuation Scheme.

Applications stating age, qualifications, present position and experience, together with the names of two referees, should be addressed to the undersigned to be received not later than Monday, February 15, 1954.

W. J. COLLINS GARRARD,
Divisional General Manager.

Crane Hill Lodge,
London Road,
Ipswich.
January 25, 1954.

SOUTH EASTERN GAS BOARD

ASSISTANT ENGINEER—MECHANICAL

BRIGHTON (PORTSLADE) WORKS—

SUSSEX DIVISION

APPLICATIONS are invited for the above-mentioned position. The Portslade Works are being extensively modernised and the Manufacturing Plant now includes Woodall-Duckham Continuous Vertical Retorts of approximately 11 million cu. ft. per day capacity, together with a Humphreys & Glasgow C.W.G. Plant of 7 million cu. ft. per day capacity with the usual ancillary plant such as mechanical handling plant, boilers, turbines and boosters. A further installation of Continuous Vertical Retorts with a capacity of approximately 5.5 million cu. ft. per day is now under construction.

Applicants must be fully competent to maintain such plant and should have had extensive practical and supervisory experience in mechanical workshops practice.

Corporate membership of the Institution of Mechanical Engineers would be an advantage but this is not insisted upon if gas works experience has been extensive.

Commencing salary will be not less than £950 per annum.

Applications in writing quoting reference V10/323 and giving full details should reach the Personnel Manager, South Eastern Gas Board, Katharine Street, Croydon, not later than fourteen days after the publication of this notice.

WEST MIDLANDS GAS BOARD

WALSALL AND DISTRICT DIVISION

VACANCY FOR

SALES AND SERVICE SUPERINTENDENT

WEST BROMWICH DISTRICT

CANDIDATES should be fully experienced in the installation and maintenance of all types of gas appliances and ancillary equipment, the development of sales and the control of supervisory Staff, Gasfitters and associated personnel.

The successful candidate will be responsible for supervising the operation of a Sales and Service Section for a District, comprising approximately 30,000 consumers covering domestic and commercial installations.

The salary for the post will be within Grade IX (£635-£735 per annum) of the Salary Scales of the National Joint Council for Gas Staffs.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications stating age, qualifications and experience, together with the names of two referees, should be addressed to Mr. E. Hardiker, Divisional General Manager, West Midlands Gas Board, Walsall and District Division, Walsall Factory Estate, Tame Bridge, West Bromwich Road, Walsall, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WALSALL AND DISTRICT DIVISION

SHOWROOM MANAGER,

SMETHWICK DISTRICT

CANDIDATES should be fully experienced in showroom management, including publicity, showroom displays and interviewing consumers requiring special attention.

The successful applicant will be responsible to the Group Sales and Service Superintendent for the supervision of showroom personnel and for assisting in the development of sales in the District.

The salary for the post will be within Grade VII (£565-£645 per annum) of the Salary Scales of the National Joint Council for Gas Staffs.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications stating age, qualifications and experience, together with the names of two referees, should be addressed to Mr. E. Hardiker, Divisional General Manager, West Midlands Gas Board, Walsall and District Division, Walsall Factory Estate, Tame Bridge, West Bromwich Road, Walsall, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

BIRMINGHAM AND DISTRICT DIVISION

DEPUTY DIVISIONAL

DISTRIBUTING ENGINEER

THE POST is open to a suitably qualified Engineer and the duties will cover control of the whole of the distribution activities in the Division embodying mainlaying, boosting and compressing plant, high and low pressure storage stations, governor stations, etc. Although largely an industrial area there is a wide variety of distribution systems in operation in the Division.

Applicants should have had previous experience in some or all of the main features of distribution mentioned and should either be a member of the Institution of Gas or Mechanical Engineers or hold an Engineering Degree.

The successful candidate will be responsible to the Divisional Distributing Engineer.

The salary will be in accordance with the scale of £925 × £50 to £1,125 per annum.

The post is pensionable and the successful candidate will be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WOLVERHAMPTON & DISTRICT DIVISION

DUDLEY DISTRICT—

WORKS SUPERINTENDENT

THE PLANT consists of Glover-West and Woodall-Duckham Vertical Retorts and large automatic C.W.G. plant.

The successful candidate will be responsible to the Engineer and Manager for the control of all technical staff and workpeople engaged on the Works, and for the operation and maintenance of Works plant and vehicles. Good organising ability and experience in a similar position are essential.

Candidates should preferably possess the Institution of Gas Engineers Higher Grade Certificate in Gas Engineering (Manufacture) or an equivalent professional qualification.

The salary for the post will be in accordance with Grade X (£690-£790 per annum) of the National Salary Scales for Gas Staffs.

A modern semi-detached house away from the Works will be available at a reasonable rental.

The post is pensionable and the successful candidate will be required to pass a medical examination.

Applications, giving details of age, qualifications and experience, together with the names of two referees, should be addressed to Mr. F. C. Briggs, Divisional General Manager, West Midlands Gas Board, Wolverhampton and District Division, Kensington House, Bath Street, Dudley, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

ASSISTANT ENGINEER (CIVIL)—

WALSALL WORKS

THE successful candidate will be required to superintend and be responsible for the construction of foundations, roads and structures in reinforced concrete in connection with the extension of the works and plant at Walsall works for two years.

Experience in carrying out similar work is essential, and membership of the Institution of Civil Engineers will be an advantage.

Applications, giving details of experience and qualifications and the salary required, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

NATIONAL COAL BOARD invite applications for a technical post in the By-Products and Briquetting Branch of their London Headquarters Carbonisation Department. The appointment, which is superannuable, will be in a grade carrying a salary range of either £1,250-£1,700 inclusive or £900-£1,300 inclusive, depending on the qualifications and experience of the successful applicant.

Candidates should hold recognised qualifications in Chemistry, Chemical Engineering or Fuel Technology, and have had practical experience in the coal by-products industry or in the oil industry, preferably with a background knowledge of coal carbonisation. Duties will be concerned with technical developments and operations in the treatment of crude benzole and crude tar, including tars derived from new smokeless fuel processes.

Write, giving full particulars (in chronological order) of age, education, qualifications and experience (with dates) to National Coal Board, Establishments (Personnel), Hobart House, Grosvenor Place, London, S.W.1, marking envelope TT/734. Original Testimonials should NOT be forwarded. Closing date March 1, 1954.

NORTH WESTERN GAS BOARD

NORTH CHESHIRE GROUP

TECHNICAL ASSISTANT (DISTRIBUTING)

STOCKPORT DISTRICT

APPLICATIONS are invited for the above pensionable appointment at a salary within Grade A.P.T. V (£480-£560 per annum).

The successful applicant will be required to supervise the work of distributing personnel. Applicants should possess at least the Ordinary Grade Certificate in Gas Engineering (Supply) of the Institution of Gas Engineers or an equivalent qualification and be experienced in gas distributing practice at both low and high pressures.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (North Cheshire Group), Gas Works, Portwood, Stockport, within fourteen days.

PATENTS

KINGS PATENT AGENCY, LTD.

(Director, B. T. King, A.I.Mech.E., Patent Agent.) Advice, Handbook, and Consultations free. 146a, Queen Victoria Street, London, E.C.4. 'Phone: City 6161.

PLANT FOR SALE

FOR SALE:—ELBOWS, malleable iron screwed ¼ in. gas parallel thread, large quantities available at cheap price. Apply: Purchasing Department, Parkinson Stove Co., Ltd., Stechford, Birmingham.

MISCELLANEOUS

WATER-CONTENT TEST — 3 MINUTES — Already in use in the gas industry, "SPEEDY" MOISTURE TESTER gives accurate results with coal, coke and ash, and many chemicals. Needs no electricity; no skill. Portable. Write for illustrated brochure or order direct £24 10s. 0d. complete.—Thos. Ashworth & Co., Ltd., (Dept. G.J.), Basket Street, Burnley, Lancs.

UNDERPRESSURE ENGINEERING CO., LTD.

UNDERPRESSURE CONNECTIONS
SPLIT COLLARS
SOCKET CLIPS

UNION FOUNDRY, MANSFIELD, NOTTS.

ALL TYPES OF DISTRIBUTION MATERIAL IN STOCK

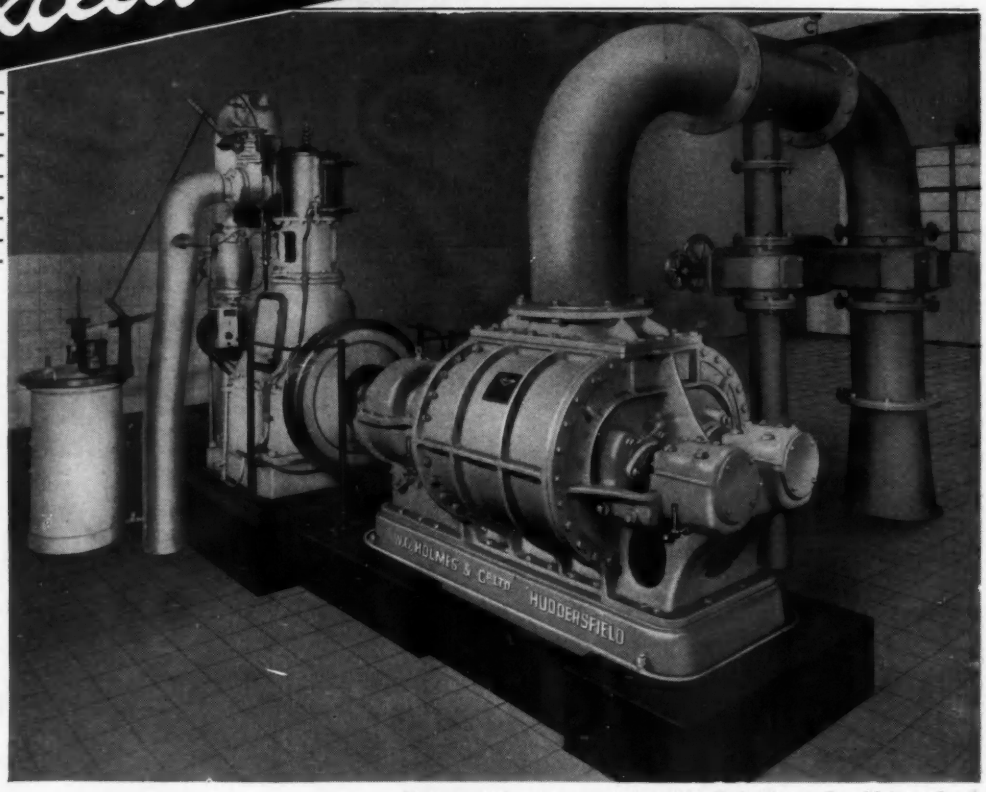
Service Enquiries:

STAFFORD HOUSE, NORFOLK STREET, STRAND, W.C.2.

'Phone: MANSFIELD 1256. 'Grams: CASTINGS, MANSFIELD.
'Phone: TEMPLE BAR 9910. 'Grams: WASHER, ESTRAND, LONDON

CENTRAL ACTION DRILL STANDS
SERVICE CLEANSERS
TOOLS, ETC.

THE HOLMES-CONNERSVILLE EXHAUSTER at NELSON Exceeds Expectations!



Photograph by kind permission of H. D. Robinson, Esq. M. Inst. Gas E., General Manager, Burnley Group of the North-Western Gas Board.

RENOWNED FOR RELIABILITY AND MINIMUM OF MAINTENANCE

FOUNDED 1850 HOLMES HUDDERSFIELD

W. C. HOLMES & CO LTD · HUDDERSFIELD · LONDON · BIRMINGHAM

Tel: Huddersfield 5280 London: Victoria 9971 Birmingham: Midland 6830

C 2221

we serve to burn

"Fishtail" type burner *with two-armed stamped pattern injector for heating liquid in tanks by submerged horizontal combustion tubes. For use with low pressure gas supplies.*
Size Range: *1", 1¼", 1½", 2" and 2½" outlets.*
Capacity Range: *45-280 cu. ft. of gas per hour.*

Note.—These four burner heads are for high pressure gas or low pressure gas and air blast.

Brass non-blow-off head types: *deal with 5 to 10 cu. ft. of gas per hour.*

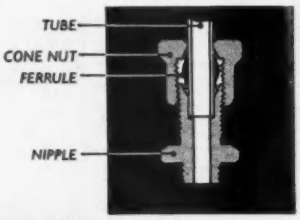
Stainless steel, "F" type head, burner: *deals with 8 cu. ft. of gas per hour.*

Perforated head type burner: *deals with 10 or 15 cu. ft. of gas per hour.*

Type 2 Mixture Controller, *for controlling quality of air/gas mixture irrespective of varying pressures and resistances. Temperature control is varied by manipulation of the air cock only.*
Capacity Range: *from 130 to 1,190 cu. ft. of gas per hour according to air pressure (½ lb. to 1lb.) and size. For low pressure gas systems.*
Air Inlets: *1", 1¼", 1½" and 2" diameters gas thread.*

DID YOU KNOW?

KEITH BLACKMAN have been making compression joints for many years and the present design embodies features developed as a result of this long experience. Notice that the shape of the ferrule is such that the joint is made without unduly stressing the tube.



INDUSTRIAL GAS EQUIPMENT

Keith Blackman LIMITED
MILL MEAD ROAD, TOTTENHAM, LONDON, N.17
'Phone: Tottenham 4522 (twelve lines). 'Grams: "Keithblac, Norphone, London."
BRANCH OFFICES: AT MANCHESTER, BIRMINGHAM, LEEDS, GLASGOW, NEWCASTLE-ON-TYNE, PENARTH near CARDIFF, AND BELFAST

510

S/N/F/T/I

Copper Tubes for Housing

MT9 *Photo: By courtesy of the Director of Housing, Corporation of Glasgow.*

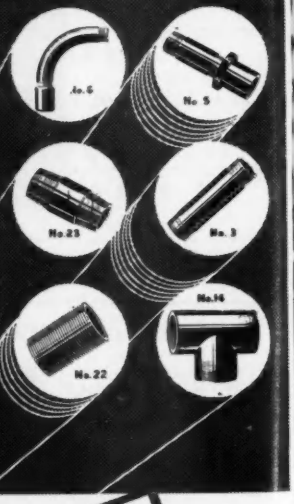
Solid drawn copper tubes for domestic water and gas services and electrical conduit. Specify B.S. 659/1944 for water and gas services ; B.S. 1386/1947 for underground water services and B.S. 840/1939 for electrical conduit.

SCOTTISH NON-FERROUS TUBE INDUSTRIES LIMITED
SALES OFFICE: 4, BLYTHSWOOD SQ., GLASGOW, C.2
TELEPHONE: DOUGLAS 7020 WORKS: HILLINGTON, GLASGOW, S.W.

STEEL TUBES & FITTINGS

FOR

Gas, Water & Steam



TRADE MARK

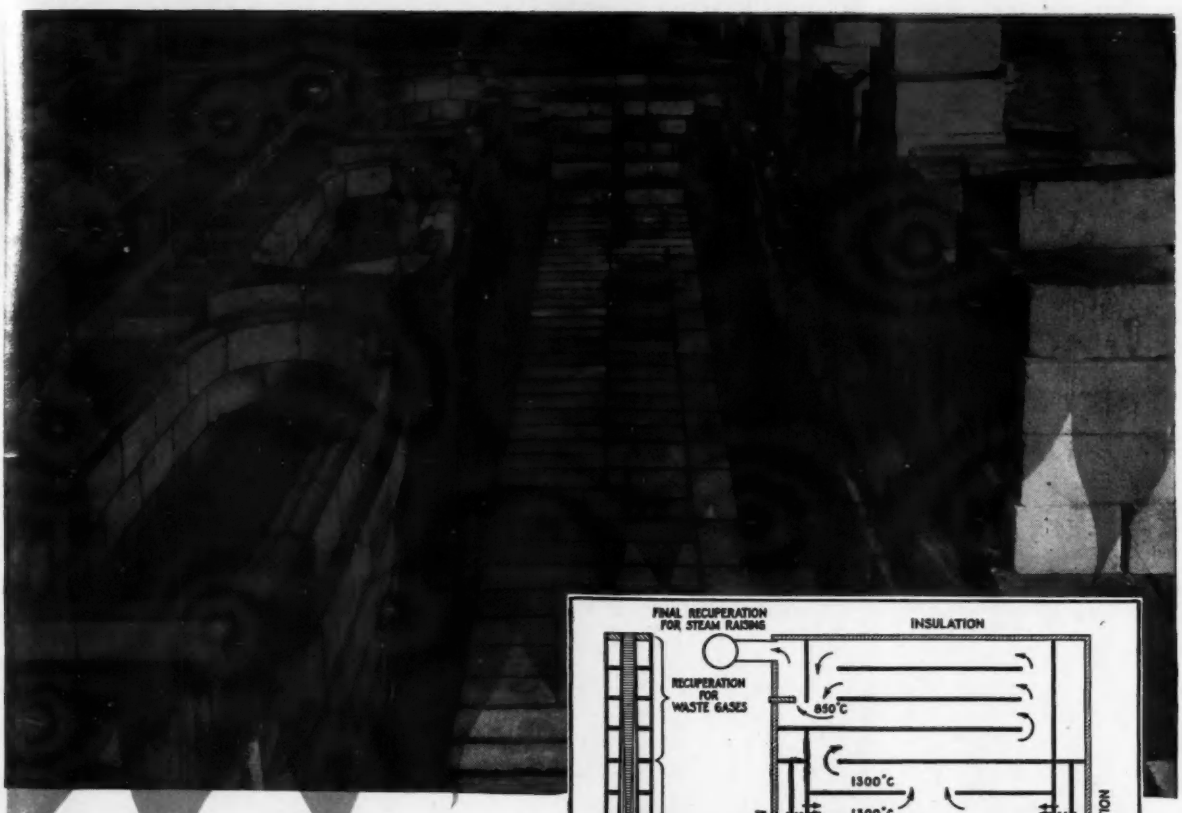
RUSSELL BROS (WALSALL) LIMITED
BRADFORD TUBE WORKS · WALSALL · ENGLAND

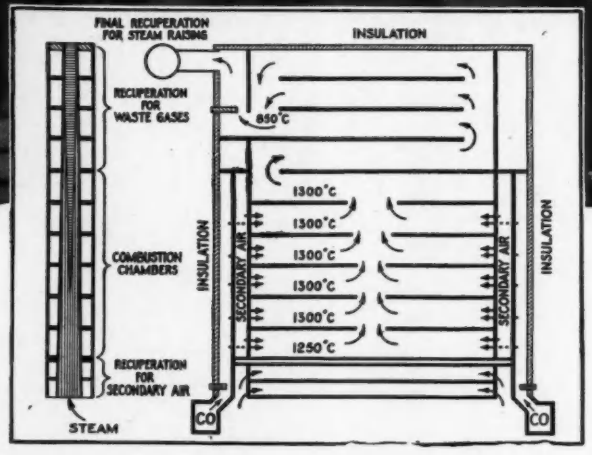
The Bradford Tube Works occupies a factory area of some three acres exclusively devoted to the manufacture of Steel Tubes and Fittings.
Contractors to Admiralty and War Office
Extensive stocks.

Registered as a Newspaper. Printed by STRAKER BROTHERS LTD., E.C.2 for WALTER KING LIMITED, 11, BOLT COURT, FLEET ST., LONDON, E.C.4. Wednesday, February 10, 1954.

"Balanced Heating"

MEANS ECONOMICAL GAS—MAKING





Great reductions in the amount of fuel required for the carbonization process have been recorded in the "Balanced Heated" settings of the Glover-West continuous vertical system.

This is due to two main factors. The retorts are heated by *primary* combustion of producer gas which enters the combustion chambers at *both* sides of the setting. Even heating of the retorts ensures maximum utilization of heat and eliminates high local temperatures and fuel wastage.

In addition, improved control of individual combustion chamber temperatures ensures maximum gas production from all coals.

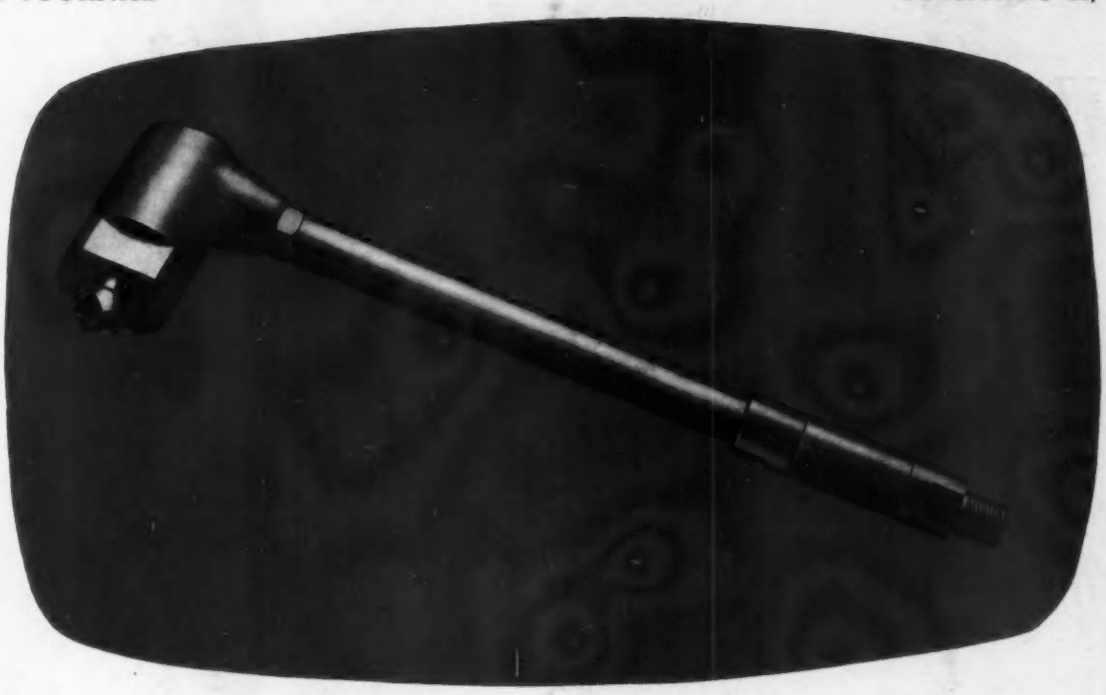
* *Illustration shows a "Balanced Heated" setting under construction.*

West's Gas
IMPROVEMENT CO. LTD.

ALBION IRONWORKS · MILES PLATTING · MANCHESTER 10

Telephone: COLlyhurst 2961. Telegrams: Stoker, Manchester.

London Office: Columbia House, Aldwych, W.C.2. Phone: HOLborn 4108-9 Grams: Wesgasco, Estrand.



Compressed Air for better Metal preservation

"BROOMWADE" Scaling Hammers make short work of rust, scale or paint removal from metal structures.
These simple, valveless tools have only one working part. Special pistons are available for weld beating and very light caulking duties.

"BROOMWADE" Pneumatic Equipment is built to meet *your* requirements.
"BROOMWADE" offers you :

- Expert technical advice on all your compressed air problems.
- Complete world-wide, after-sales service by works trained personnel.
- Low initial cost—early delivery.

The SV78 Portable Sleeve Valve Compressor delivers 60 cu. ft. of free air per minute at 100 lb. p.s.i. —sufficient to operate 8-10 Scaling Hammers.

"BROOMWADE"

BROOM & WADE LIMITED, HIGH WYCOMBE, ENGLAND

Telephone : High Wycombe 1630 (8 lines) Telegrams : 'Broom' High Wycombe

43 SAS